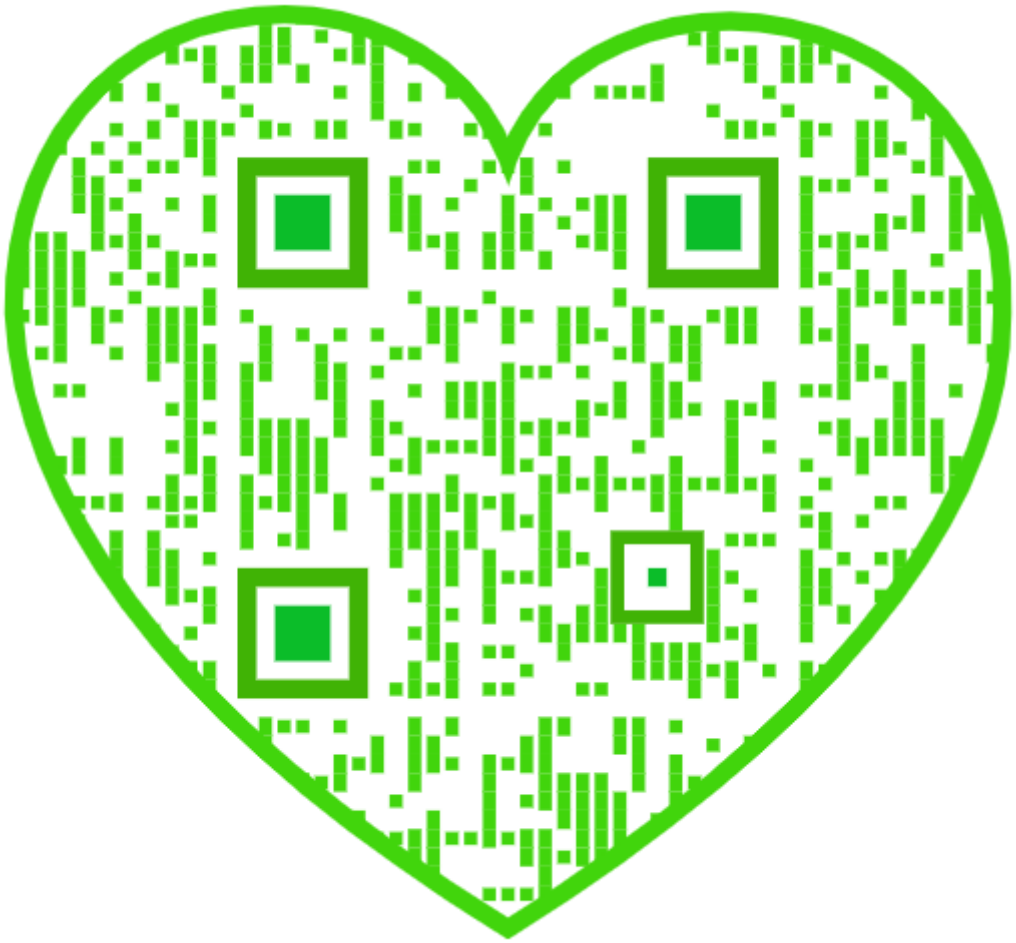

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ON

THE PRINCIPLES OF DESIGN

IN

ARCHITECTURE

AS DEDUCIBLE FROM NATURE

AND EXEMPLIFIED IN

THE WORKS OF THE GREEK AND GOTHIC ARCHITECTS.

BY EDWARD LACY GARBETT,

ARCHITECT.

PARTS I. AND II.

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PREFACE.

Two widely different arts at present bear the name ARCHITECTURE. The more common of them may be defined as the art of clothing or masking buildings, of whatever class, with scenic representations of the features of a superior class, erected in some past age. The merit of these works is of course to be estimated by the fidelity with which they adhere to the peculiar marks of the period chosen, and avoid those belonging to any other period or country. This art has now arrived at great perfection, in consequence of the many fine archæological works in which specimens of the building styles of various ages and nations are delineated. Indeed, few things can be easier than this is now rendered by such engravings; in the absense of which, of course, verbal directions on this art would be useless, and whose presence renders them needless. With this art, therefore, the present little work has no concern.

There is another art, however, of the same name, more ancient, yet less known and practised at present, because more difficult and troublesome. This is the art of Building Well,—well as regards every purpose intended in building, and not only the actual fitness of a building or its parts to their several purposes, but also the fitness of their *appearance* thereto, together with the generally pleasing character of this appearance, and the correct or tasteful choice and disposition of such decorations (if any) as may aid in this object.

All that relates to the *appearance* of buildings and their parts has been termed architectural DESIGN, or sometimes 'Architecture Proper,' as not being reducible to the principles of any other art; and it is perhaps the only branch of architecture in which, as a whole, those not professing the art can be expected to take an interest. The present treatise is intended to confine itself to this, as far as it can be separated from the other branches, which, however, (especially as regards the branch of construction,) is not always possible.

The existence of professors of this art, implies in itself that they profess to have attained, by special study, the ability to do rightly that which others, without that preparation, do wrongly. That is, it implies the existence of such things as *right* and *wrong* taste in architecture, or, in other words, the dependence of this art on fixed PRINCIPLES,—otherwise the profession would be useless.

"There is," says a proverb, "no disputing about *tastes*," *i. e.* affections of the palate or other senses. It is far otherwise with *Taste*,—another word for sound and cultivated sense, judgment, and perception of fitness. This is a most legitimate, instructive, and fertile subject for useful discussion and conclusive argumentation. Most of the differences that appear between persons of acknowledged good taste will be found on examination to arise from their different acceptations of the same words, and to vanish when these words are defined and then carefully limited to one meaning. Thus a late writer on architecture lays this down as "a principle of simple common sense. Wherever you can rest, there decorate. Where rest is forbidden, so is beauty." Now, taking these words in their accustomed meaning, the latter part of the statement is very disputable, since common sense and the observation of nature fail in discovering that beauty is forbidden any where, or in any circumstances; but when we learn

that this word, as used by the author, is synonymous with *ornament* or *decoration*, our objection vanishes.

The principles of Taste in Architecture, as in every other fine art, can never be *all* elicited: if they could, the art would cease to be a fine art: it would no longer afford a field for genius, which consists in the discovery and practice of principles previously unknown. These are the *secrets* of great artists, kept secret, not from any selfish motive, but because artists, seldom much skilled in the use of verbal language, can rarely translate into that language, even the principles with which they are most imbued. Nay, the most important of these are often of so refined and delicate a nature as hardly to admit of statement in words. "Yet," says Sir Joshua Reynolds, "it does not follow but that the mind may be put into such a train as to perceive, by a kind of scientific sense, that propriety which words, particularly words of unpractised writers, such as we are, can but very feebly suggest."

Every principle in Art (unlike one in Science) has to be discovered *twice;* first, by the artist of genius who introduces it into the *practice* of his art, but would generally be quite unable to state or explain it in words; and secondly, by the critic who translates it into verbal language, and thereby makes it part of the *theory* of the art. Many centuries may elapse between these two discoveries of the same principle: when, at length, it is absorbed into the theory of the art, it becomes common property, and the practice of it ceases to be a mark of genius, for genius consists in practice outstripping theory. The advance of theory, however, does not narrow the field of genius, but urges it on into a higher sphere. As its secrets are, one by one, wrested from it, so it must wrest others from nature.

The present little volume does not pretend to state all the principles now known in the theory of architecture, nor per-

haps even the most important of them. It rather aims to dwell on those which are most neglected in the present (notoriously defective) practice of this art.

The reader is supposed to have acquired from the two former volumes of this series a general notion of the history of this art, of the peculiarities of its various styles, and of the nomenclature of the features of its two great systems,—the Classic and the Gothic: but should any terms new to him occur, 'Weale's Rudimentary Dictionary of Terms used in Architecture, &c.,' is at hand.

Our plan is quickly told. The first chapter is devoted to the question—'What is architecture, and what are the objects at which it aims?' In the three following, we endeavour to deduce from the works of nature, and from the consideration of these objects themselves, some rules and principles which might be expected to conduce to their attainment; and to show that these principles have actually presided in the most successful productions of the art. In the last two chapters we examine the two architectural systems, by general consent called *pure* or *complete* styles, with a view to show that their purity consisted in the observance of these principles, and to elicit some other principles peculiar and essential to each system. We conclude with a few remarks on the vexed question of the present state and prospects of the art.

E. L. G.

March, 1850.

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PRINCIPLES

OF

DESIGN IN ARCHITECTURE.

CHAPTER I.

DEFINITION OF ARCHITECTURE—ITS NECESSITY, USES, AND REQUIREMENTS.

"Well building hath three conditions; Commodity, Firmness, and Delight."—Sir Henry Wotton.

Architecture is the art of well building; in other words, of giving to a building all the perfections of which it is capable.

This differs in no respect from another definition lately put forth, "the art of the beautiful in building;" for those who have undertaken to investigate the abstract nature of beauty, appear not to have arrived at any more definite conclusion than that it consists in *perfection* of any kind; so that, whether we speak of the beauties of a building, or its perfections, we mean the same thing. The term Beauty, however, is often restricted, in architecture, to those merits of a building which are not necessary to its use, or its mechanical perfection; and hence the classification of the aims of architecture under three heads,—Fitness, Stability, and Beauty.

Nothing can be called architecture which does not aim professedly at *all* these three objects. Their respective claims to attention may be very variously proportioned in different kinds of architecture, such as the ecclesiastical, civic, domestic, and monumental kinds; but if there be any structure which

professes to embody only two of these requirements, (no matter which two,) that is not architecture at all.

The distinction between architecture and building is a distinction of very recent origin; for it is an idea quite peculiar to the present age, and nearly confined to the English nation, that building may be unarchitectural. Never, till very lately, was the notion entertained of erecting buildings professedly with no design beyond convenience and stability. I say *professedly*, because a very slight examination will, in most cases, detect the complete hollowness of this profession, and will beget a doubt whether, in any case, the pursuit of these two ends alone, to the exclusion of every other, is really possible in the nature of man. Without pretending, however, to decide whether this is possible or not, we may observe that the mere proposal of it necessarily removes the design in which it is proposed entirely out of the province of architecture; and thus it happens that we have at present in England (what was never thought of before or elsewhere) a large amount of building which is not architecture, or at least pretends not to be so. As many profess then to build "*without any attempt at architecture*," there has hence arisen a habit of restricting the term Architecture to that which they do not attempt,—viz. to those objects of well building which are not included in or essential to use and stability. Now, this is a most pernicious habit, calculated to lower while it affects to raise the sphere of the art; tending, in fact, to reduce it, as we shall presently show, to *decoration*, and its professors to mere decorators. The art which engrossed great part of the attention of a Phidias, a Michael Angelo, and a Wren, and the whole mind of a Palladio, is something more than decoration.

Adhering to the last-mentioned acceptation of the word, not, indeed, as confined to decoration, (which is a gross perversion of it,) but as extending to whatever perfections a building may possess besides convenience and stability; and denoting this, after the example of a late writer on the subject,*—as

* Ruskin, 'The Seven Lamps of Architecture.'

'architecture proper,'—we are here met by a difficulty on the threshold, and one which few architects seem inclined to look boldly in the face. A question arises quite naturally, yet a question which we all seem inclined to evade; viz. *Why, are not convenience and stability enough to constitute a fine building?*—in other words, Whence the necessity for architecture proper?

Observe, it will be no answer to say, that it is man's nature not to be satisfied with the supply of necessities, but to seek for luxury, and to admire the beautiful. This will not do, because it is generally admitted that in all other arts, at least all other useful arts, and in all objects of use, whether natural or artificial, (buildings alone excepted,) the appearance of design, the correct adaptation of means to an end, seems in itself to constitute beauty, and even a beauty of the highest kind, so that those who have undertaken to investigate the laws of taste in general, as applicable to all the arts, have commonly ended by referring them all to this principle; in fact, denying that beauty can ultimately be distinguished from utility. Thus they say, that a piece of furniture, or an utensil, appears well-formed, or well-proportioned, whenever its form or proportions are such as fit it best for the end it is to serve, and that, whenever, by deviating from this form or these proportions, it becomes less fit for its purpose, so will it appear less beautiful. Not so, however, with buildings; they may be perfectly fitted to their purpose, and yet not only devoid of beauty, but positively hideous and disgusting to the eye. Indeed, *they are always so*, when really designed with no view beyond utility and strength. If mere building, or engineering works, not affecting architecture, ever appear pleasing or even inoffensive, it is because they were intended and designed to please, and therefore are really architectural, and their designers really architects, though they might persuade others, and even themselves, that they were all the while throwing architecture to the dogs.

But every structure that is really planned on these utilitarian principles—every one that is really unarchitectural, is ugly,—not merely indifferent, but positively offensive. The assertion may sound strange to the reader, but the fact is familiar, at least to every Englishman. To the majority of the world, indeed,—to savages, to Turks, to the inhabitants of most Italian, French, or even Dutch cities,—the position here set forth might be not only strange, but incredible. I should shrink from the attempt to prove it, so difficult would it be to find examples enough for its support. In England, however, there is no such difficulty. The Londoner, in whatever quarter residing, from Bermondsey to Belgravia, has only to look out of his back windows, to have ample evidence on this point. His view will be bounded by tall thin walls, or rather screens, apparently only half a brick thick, and showing no appearance or intention of being connected with roofed buildings. They are spotted over, neither regularly nor irregularly, with square glazed holes, seemingly broken through after they were built, and are edged at the top with a narrow line of stone, above which, the tops of certain roofs occasionally, though rarely, betray their presence; while below it, at every interval of about twenty feet, appears a gaping wound, ready to discharge something (it is not apparent what) into a funnel and long pipe, the clumsy attachment of which to the wall renders it evident that the use of these additions was unknown by those who erected it. Equally unforeseen were the improvements which rise from behind this screen, and break the sky-line with a hundred grotesque bodies of red clay and blackened metal, in varied forms of ugliness, and nodding to each other in a way that makes their equilibrium seem as precarious and unaccountable as that of the tall brick screen itself. Long use may have familiarized the spectator to these hideous masses of building, or rather may have enabled him to shut his mind's eye against them, so as to receive their optical image without being properly said to *see* them; but ask the foreigner, the child, or the rustic,—ask any

one who is accustomed either to no building, or to a different mode of building, (no matter how *plain* that mode may be,) his opinion of these London house-backs, and you will learn what they really are.

Now, it will not do to say habit renders forms pleasing, and those which are new to us are always in some measure displeasing. Who was habituated to the peculiarities introduced by Palladio (into the plainest buildings), which were no sooner seen than acknowledged to be graces, and were imitated, and still continue to be so, with more or less success, all over Italy and the greater part of Europe? Who was habituated to the peculiarities of the ancient Greek building forms, when their exhibition for the first time, in the engravings of Stuart and Revett, instantly dazzled the whole civilized world into blind adoration? Who is habituated to the finest things in any art?

But it is needless to spend more time in proving that purely utilitarian buildings are always ugly;—*Causa latet, res est notissima.*

Now, a fault cannot be corrected or avoided with certainty till we have inquired into its cause. Whence, then, arises this *inherent ugliness of building*, which it is the first object of 'architecture proper' to correct? As there seems nothing analogous to it in other useful arts, it must arise from the perception of some evil peculiar to the nature of building, as distinguished from agriculture, gardening, furniture, pottery, &c. After searching through many authors, in the hope of finding some account of this fundamental fact in architecture, on which indeed its very existence as an art seems to depend, the only hint I have been able to find is contained in two words of a writer not remarkable for perspicuity, who speaks of "the selfish and even cruel aspect which belongs to our great mechanical works:"* (he writes in America.) I cannot help suspecting that these words touch

* R. W. Emerson's 'Essay on Art.'

the root of the evil. Have we not here a clue to the solution of the riddle? and is not an unarchitectural building ugly simply because it looks selfish? It will be observed that the productions of other arts have not this inherent defect: they are goods to their owners without being evils to any one. But a great building is, in certain respects, a necessary evil: it shuts out from us air and light, and the view of beauteous nature; it encumbers a portion of the earth's surface, and encloses a portion of the free atmosphere. *It has no right to do so* without making or attempting what compensation it may, for these injuries. Therefore the building which makes no such attempt, offends all eyes;—I should rather have said all minds, for no one who considers the subject much, will believe that beauty in form (apart from colour) is a matter of sensation at all: for as long as the mind is not directed to an object,—as long as the object is merely *seen* and not *looked at*, it matters not one tittle whether it be beautiful or ugly, so that it be not physically injurious to the organ of sense, as by a too vivid colour, or a too numerous set of parallel equidistant lines.* The mere sense of sight, like other senses, can only be pained by things which tend to injure it,—as the ear, by too loud or long-repeated vibrations; the smell and taste, by poisons, or by any thing in injurious excess; and the touch, by whatever tends to injure the skin. When, therefore, we speak of offending the eye by tasteless design, we mean the mind's eye:

> "It is the mind that sees; the outward eyes
> Present the object, but the mind descries."

Seeing, in this acceptation of the word, is synonymous with feeling, and means a train of reasoning which the mind, by frequent repetition, has acquired the habit of performing so rapidly, or rather with so much abbreviation and omission of intermediate steps, that it cannot even follow itself, or trace its own path, but arrives at the conclusion that the object is

* Brewster's 'Optics,' page 298.

pleasing or displeasing, not only without being able to say why, but often without being able to discover why, except by an amount of investigation and analysis which very few have the patience to make.

It is thus that an unarchitectural building is *seen* and *felt* to be unpleasing, without the ordinary mass of spectators being able to state the steps of the argument which has led them to this conclusion,—not even the *last* of these steps, viz. the *quality* which, by being displayed or expressed in the building, displeases them. Now, I believe that this quality is *selfishness*, and am quite prepared to be laughed at, and told that this is wandering from the subject,—that this is a mental quality, and has nothing whatever to do with bricks or stones, or architectonic forms. On the contrary, I maintain that the expression of this or other mental qualities has every thing to do with beauty in building. If it be the mind that sees,—the mind that is pleased with a fine building, or displeased with the reverse,—how can it be pleased or displeased with any qualities but mental ones? How can black or white, or curved or straight, affect the mind? How can tangible objects affect it except by retaining the impress of mind, and expressing mental qualites? It is not the building we admire or condemn, but the mind that appears in it,—not the design, but the spirit that presided over it, and stamped its own character thereon, in unmistakeable and unalterable marks.

A building devoid of architecture displeases all who see it,—all whose share of heaven's light is intercepted,—whose view of the fair earth is bounded by it; because they see and feel that it benefits its owner at their expense;—they have not been thought of in the design; it is *all* for self, without appearing to care whether they are incommoded or not, or to know that there are eyes without as well as within. It is this crude, selfish *rudeness* which requires to be softened down by a *politeness* either natural or acquired, and this politeness we term architecture. It is only one portion indeed of the aim

of 'architecture proper,' but it is the most indispensable portion, without which all attempts at the higher aims of beauty, sublimity, or definite expression will be totally useless. The building that aims at being any thing more than useful and strong, must first be polite. This is the lowest quality in architecture as distinguished from building.

Some seem to allow the term Architecture only to *acquired* politeness in building, but I am convinced that it ought to be applied quite as much, if not more, to that which is *natural;* indeed they so merge in one another, that it would be impossible to draw the line between them. It must be observed that the structures of savage nations always exhibit this natural politeness. Let them be ever so rude in construction or in decoration, or in both, they are never rude in expression; never do they seem made for self alone, like the oyster, shut up in the narrowness of its shell, pushing forth excrescences wherever its internal purposes suggest, without appearing to know that there is a world outside. On the contrary, the rudest of these huts present on their exterior some evidence of unnecessary design, some regularity or symmetry not required by their internal purposes, and this stamps them as Architecture. It shows an aim beyond convenience and stability; it shows the spectator that he, even he, has been cared for as well as the owner, and the structure belongs not altogether to a man, but in some sort also to humanity;—as in the models from which these children of nature learnt their art, there is nothing made for itself; and, from the world-sustaining sun down to the little busy world-enlarging coral-line, nothing appears to belong to itself, with the sole exception of the oyster above mentioned—a marvellous anomaly, which may possibly be required to complete nature's great system of symbol-teaching, her universal language, which, without this, would have no word for selfishness.

The name Architecture, therefore, though it applies not to mere building, must apply to these huts and wigwams, as well as to those buildings which conform to all the rules of a sys-

tematized etiquette, invaluable to those who can use it aright, but utterly incapable of standing in the stead of an honest intention and desire to *be* what you would appear—unselfish. If this desire be wanting, it is waste of time to attempt elegance, waste of money to add decoration; all the graces of Palladio and all the ornaments of Barry will avail nothing: the mask will never completely cover you: your real self *will* peep out somewhere, and spoil all.

It is a great mistake, though a common one even in architectural books, to suppose an edifice cannot be architectural unless it have decorative or unnecessary features.* The first purpose of this art—viz. politeness in building—may be attained perfectly without any unnecessary *features*, but not without unnecessary *design*.

It was Goethe, I believe, who called Gothic architecture "a petrified religion." I cannot but regard the perfection of domestic architecture as an embodied courtesy.

And will any one dare to say that this courtesy is useless? Will any one dare affirm, for instance, that when the fearful cry of *Guerre au château, paix à la chaumière*, arose from misguided millions, there was no difference (other things being equal) observed between the mild, pleasant-fronted château, which though embattled did not frown, but by its benign expression seemed the protector of the surrounding cottages, and by its symmetry and regular features resembled an organism of nature, not its own, but belonging to the surrounding scene; and the rude heap of excrescences, which, oyster-like, "concentred all in self," bore no apparent relation to any thing without, but insolently turned its back on the beholder, (every side being in fact a back,) and said as plainly as forms could speak, 'Stand off, *noli me tangere*; I care not a straw for you; I have nothing in common with such a vulgar herd?' I doubt not that, had many buildings of this last description then existed in France, (unfortunately there were few, or none,) they

* 'The Seven Lamps of Architecture,' page 2.

would have done good service by bearing the brunt of the storm, and saving some of their more courteous neighbours.

Is architecture, then, it will be asked, a concession to communism, and a pampering of the worst feelings of a mob? By no means: if it be so, then is common politeness the same; for its object is to avoid the irritation of these same feelings, which, be it remembered, bad as they may be, are yet human and universal. It is not courtesy that pampers them, but its absence that excites and exasperates them. Politeness is altogether a negative art, and consists not in aiming at a positive good, but in avoiding a positive evil, the stirring up of these feelings; but as long as they exist, that is, as long as man is man, they will be excited at the idea of a great property benefiting none but its owner. Now, a great unarchitectural building is the very type and embodiment of this idea, the most tangible representation of it that we can have.

Perhaps these remarks may place the question of architecture, or no architecture, in a light which never struck the reader before. It is my object so to do, not only with this but with other more concrete questions relating to what is called taste, and to show that they are much more important than is commonly supposed. Meanwhile, I would here venture to throw out an idea bearing on this subject in general, which, though not capable of proof, appears to me as much worthy of consideration as any argument that is drawn from analogy alone. If it be true of the body and its senses, (which I believe no physiologist denies,) that they are pained or offended only by what tends to injure them, may not the continued and repeated analogies observed between the material and immaterial worlds lead us to suspect a similar law regarding the mind? The inference seems as fair as any that depends only on analogy. If this be so, then, and if, as all admit, it is the mind, and the mind alone, that sees, tastes, feels, likes and dislikes objects of art or taste, are not these self-preservative antipathies of the mind to be respected, as well as those of the body? does not this become a matter not of refinement

and luxury, but of *interest* and DUTY? Are not ugly objects to be withdrawn as *inflicting mental injuries*, just the same as a nuisance, a noise, or a stench, which is known to be injurious to the body, because unpleasant? We may laugh at the idea of the mental injury accruing from one glance at an object of bad taste; so we may at the bodily injury from a passing whiff of smoke; yet we acknowledge a difference between the health and longevity of those who live in smoke and those who live out of it. Habit counteracts and renders us insensible to the unpleasantness, *but not the injury*. Who then shall dare to guess the difference in *mental health*, between a people living surrounded and immersed in objects of bad taste, or in objects of good taste,—between a people whose works are *all* utilitarian, and one whose works are *all* artistic. These extreme cases, remember, are not imaginary. History has afforded examples of both.

It will be said, this difference with regard to works of useful art was not the cause, but the effect, of general refinement and mental health. I admit that it was both. It was the effect of refinement in the few, — the cause of it in the many. It was (before the invention of printing), and *perhaps is still*, the natural vehicle of this refinement of mind, the only means by which it could be cultivated, accumulated, or diffused; but of this more hereafter.

The first step towards refinement, whether in language, manners, or any useful art, such as building, consists in mere politeness, or the avoidance of the expression of selfishness. This first step nearly all nations make; but in the attempt to advance further, to make a second step in the same direction, nearly all wander out of the true path. Thus in the attempt to refine or exalt simple courtesy in language, it in most cases either passes into flattery and downright falsehood (as in Spain), or into a rigid observance of forms whose original intention is forgotten (as in Eastern countries). How few are the cases (not only national, but individual,) in which, without falling into either of these errors, the art of merely avoiding rudeness

is refined into a delicate perception and rejection of whatever may tend in any way to wound the hearer, and an exact appreciation and use of whatever may please, not by flattering the bad feelings, but by satisfying the good. It is the same with courtesy in building: when the attempt is made to advance it from a negative art of avoiding what is offensive into a positive art of pleasing, most schools of architecture have strayed either into the error of mistaking *ornament* for *beauty*, or into that of retaining blindly the forms which habit had rendered pleasing, till they are reduced at length to a system of stereotyped copies, or of rules without reasons, *i.e.* whose reasons have been forgotten.

The refinement of courtesy in building, into *beauty in building*, could be effected only by a most deep and subtle investigation of the laws of the human mind, and the sources of its disgust and of its pleasure, in material objects; and then a most studious collation and accumulation of whatever may please it in the forms and proportions of building. It was by this means that the several *styles* of architecture which we admire and blindly copy, were originated and brought to that perfection which we in vain attempt to rival. There is no other means of effecting beauty in building—no royal road to it. Adherence to empirical rules will not do it; still less will ornament effect it. The latter, however, is so common a mistake at present, that it is necessary here to point the reader's attention to it more particularly; for though it may seem quite superfluous to most persons to tell them that *beauty* and *ornament* are not the same thing; if they study the great buildings of the age, or simply refer to the last published work on the subject,* they will see that this distinction is by no means generally acknowledged by architects, either in practice or in theory.

First, then, with regard to the negative beauty of mere

* 'The Seven Lamps of Architecture,' chap. iv., throughout which these two terms seem to be used interchangeably.

courtesy, I think any one who reflects will admit that ornament can never conduce or add to this merit, though it may be, and often is, so applied as to oppose it. Decoration can never give or increase the expression of unselfishness; while it may often give that of *ostentation*, a particular form of selfishness. A rude speech, *i.e.* one which shows no consideration for the person addressed, cannot be rendered polite by any degree of rhetorical ornament. Flowery language cannot in any degree diminish the rudeness, but *may* render it more offensive by adding ostentation to it. This is also possible in building, as the reader may easily see exemplified by multitudes of the ornate villas that spring up along suburban roads. Every one feels that, with all their ornamental frippery, their aspect is as uncourteous, as intensely selfish in expression, as that of the 'hole-in-the-wall' house-backs, or any other pieces of professedly unarchitectural building. This is because every spectator sees that there has not been a thought bestowed on him. The whole has been designed from within, like the oyster's shell, without the slightest reference to those without; and then they have been sought to be appeased by sticking on ornaments wherever there was a place for them. But this will not do; no one is so easily deceived as this. You cannot "hide by ornament the want of art," still less the want of thought and study. The ornaments show indeed a sacrifice, for the spectator, of a little money, but no sacrifice of time and study in the design. Now, a right-feeling spectator does not look for the first, but for the second. He despises your paltry pelf;—he seeks "not yours, but you,"—the evidence of your consideration, contrivance, and thought bestowed upon him. 'Well,' you ask, 'does not thought require time, and is not time money?' Yes, but the converse is not true,—*money is not time*, still less is it thought, and nothing less than this will satisfy the spectators of your building, by showing them that they have been considered in the *design;* and by the design I mean the head-work, not the pencil-work, —that is only a part of the execution.

Not only is ornament a thing totally distinct from, and incapable of producing or aiding, courtesy of expression, but in a building destitute of the latter, every ornament that is added will increase the offensive rudeness; because we (the spectators) cannot conceive that this handiwork has been squandered for our sakes, when we see no evidence of a single thought having been bestowed on us. Whence we infer (by a reasoning so rapid as to be called taste or feeling) that this ornament can only be meant to impose on us, not to please us: it only displays the owner's wealth; and this conclusion is often confirmed by every ornament being placed, not where it will most improve the building, but where it will show itself most conspicuously. Moreover, as the ornaments are generally of the most mean and poverty-stricken description, they excite the idea, not merely of ostentation, but of the most offensive kind of ostentation—that of a proud beggar.

In a building entirely plain, in the strictest sense of the word, *i.e.* without any feature, or any moulding, cutting, or shaping, not required by its utilitarian purposes, courtesy might seem to many the only architectural merit we could expect. But some of the buildings of this kind by Palladio, (stables, out-houses, &c.) and a few by other masters, demonstrate clearly that not only may rudeness be avoided, but positive beauty created, in such buildings, without the introduction of any decorative feature, but by a studious collation of whatever will display design, order, and congruity, in the relative dimensions and arrangement of the necessary or useful features. Thus, where a mere constructor would have made two things of the same kind (two string-courses, for instance) equal, because convenience or stability afforded no motive for making them unequal, this true architect somewhat exaggerates one, and reduces the other to the least dimensions that its use will allow, in order to carry out the beautiful, (because natural,) principles of variety, subordination, and contrast; or again, where an ordinary builder would have made certain divisions in the height or breadth of the building equal, or

varying according to no definite law, simply because, in the first idea which occurred to him, the dimensions suggested by convenience happened to be equal or irregular, this artist-builder—by reconsideration, and carefully distinguishing between what convenience *required*, and what it (or rather his first idea of it) *suggested*—would contrive, without sacrificing a particle of convenience, so to adjust these dimensions as to make them exhibit a studied variety, a contrast, a law of variation, a gradation, a progression, a proportion,* a fanciful idea, a quaint trifle if you will, light as air *in itself*, but weighty and valuable as an *indication of mind*, of thought, of unnecessary design, of care bestowed on the spectator, and therefore pleasing him; or, in other words, adding to the beauty of the building. Beauty in building, of course, arises not from one or two such indications, but from the accumulation of them,—from the collection in the same structure of as many such beauties as possible, *i.e.* as many as are compatible with each other, and exhibit the same principles throughout. Few of us in this country at present, have any idea how much real beauty may be thus produced without ornament; and by this I do not mean merely without carving or forms drawn from nature, (to which the term ornament is often improperly restricted,) but without even mouldings, or any of what are called 'architectural features,' *i.e.* features unnecessary to the construction. Indeed, it is perhaps in the most utterly unadorned buildings, more than in gilded palaces, that the touch of a master in this art is most evidently seen, just as the painter's hand is seen in an outline sketch; and the famous maxim of M. Angelo, "learn to sketch before you attempt to finish," might be translated with advantage into the language of

* "Proportion is the similitude of ratios."

"Proportion consists in three terms at the least."—EUCLID, *Book* v. *Def.* 8, 9.

I have never been able to discover what this word means in the writings of architects, and shall therefore use it only in its plain mathematical sense.

another art,—learn to produce beauty in bricks and rubble, before you attempt it in friezes or traceries.

Of course, it is not meant to be implied by these remarks that ornament is not conducive to beauty, but only that it is not necessary thereto; and it may be added, that a building which is not beautiful in itself, or, when stripped of all except its necessary members, cannot by any addition of ornament be made pleasing, except to vulgar tastes. Hence we have a good test by which to try the justice of our admiration of a rich building, and detect in ourselves any lurking taint of vulgarity which, perhaps, will always remain, however we may advance in the cultivation of a pure taste. Let us fancy the building (or, if necessary, draw sketches of it,) despoiled of every thing that is merely decorative, and then see whether, in this naked state, it still excites our admiration. If not, then we may be sure that we were only dazzled with the enrichments, behind which the unskilful architect has taken refuge; and in such a building every ornament is too much.* If, on the other hand, the bare carcass remains beautiful, though stripped of all its finery, all that finery may be restored, and none of it will be added in vain, provided it be consistent with itself and with the character of the building, properly placed, and consistent every where with its situation. If it fulfil these conditions, every decoration added to this building, from the simple moulding to the historic sculpture of a Phidias or a Chantrey, will be a useful addition, and will add to the real beauty of the whole.

It has been said on this head, that "it is one of the affectations of architects to speak of overcharged ornaments. Ornament cannot be overcharged if it be good, and it is always overcharged when it is bad."† With much deference to the

* E dunque evidente che con tutta la profusione degli ornati più ricchi non dedotti da necessità nè da utile, un edifizio mal inteso sara più brutto, come più s' imbruttisce la brutta donna che più si adorna.—Milizia, '*Principj di Archª.*'

† 'The Seven Lamps of Architecture,' chap. I.

author of this maxim, I must contend, on the contrary, that the very best ornament may become overcharged by being *misplaced*. For instance, in the famous Corinthian order of Jupiter Stator,* the foliage and scrolls on the sides of the abacus and the middle fascia of the architecture are universally acknowledged to be excessive; nor would they be less so if they had all the purity and elegance that a Greek carver of the Periclean age could have given them; for they are applied to members which, for reasons to be presently explained, cannot, consistently with true taste, receive any carving at all. That the condemnation of excessive ornament, however, by modern architects, is an *affectation*, must be admitted. This is too obvious from a comparison of our words with our works; for the latter, with all their baldness, seem determined to let the spectator know, that for whatever repose the eye may get, he is indebted to poverty or parsimony,—never to design. Every building would be a Westminster Palace if it could. In the very baldest meeting-room we are sure to find something to tell us this,—some cast-iron appendage, which, because it can be made as cheaply ornate as simple, is made the exponent of the *real* taste of the age; and in a material coarser and blunter-edged than the coarsest sandstone, vainly attempts to embody foliage and tracery more minute than any ancient or mediævan ever cut in marble or in oak. But for this, we might deceive ourselves so far as to fancy these broad plastered surfaces indicative of a taste for noble simplicity; but a lamp or a ventilator at once dispels the pleasing illusion by crying, 'Look at me, and see what the designers would have if they could. Think not these bare piers are so from choice; they only give you repose because they cannot afford fritter.' Other penurious ages have had the wisdom to 'make a virtue of necessity,' and, like the fox in the fable, affect to despise the grapes they could not reach. We are more honest in this, and frankly inform posterity that we have at once the most tawdry taste

* See, for the *column only*, 'Rudimentary Architecture,' Part I. page 53.

ever indulged, and the shortest purse to gratify it;—that we *would* have works more florid than either the florid Roman or the florid Gothic, but cannot afford as much decoration as that of the Roman bridges or Gothic barns. I do not of course object to this frankness, but only deplore the unfortunate result,—buildings which, by an unparalleled ingenuity, seem to combine in themselves the most opposite and apparently incompatible faults—nakedness and tawdriness.

But it must now be observed that this second aim of architecture, viz. the beauty to which ornament conduces, is by no means the highest beauty or merit at which this art should aim. Indeed, if it attempted nothing beyond this, it is doubtful whether such attempt would entitle it to a place among what are called the Fine Arts at all. The mere fact of an art being intended to *please*, is not sufficient to place it in this rank. If it were so, cookery would have to be ranked among Fine Arts. A late author, of great research and ingenuity, actually places it among them, though with evident reluctance, and an expression of a fear lest it should "expose his whole system to ridicule,"—a system certainly deserving any thing but ridicule. Let us try then if it be not possible to rescue architecture from this low company, by showing that it is capable of attaining some end which gastronomy cannot reach; for, until this be shown, there is certainly no reason for placing it in a different class of arts.

The author above referred to * classifies all arts, or rather all beauties or merits to be found in works of art, under three heads: 1st, *Technic*, that is, relating to the mechanical execution and finish, including (in the case of architecture) not only truth of constructive principle, solidity, accuracy of workmanship, and polish, but also the artistic increase of apparent size, and expression of power,—merits which certainly ought to be placed in a higher class; 2ndly, *Æsthetic*,† relating to the

* Fergusson, 'Essay on the Principles of Beauty in Art.'

† It is much to be regretted that this author should have used the word *æsthetic* in a different sense from that commonly received, especially as

power of pleasing, including the whole province of beauty in its ordinary sense; and 3rdly, *Phonetic*, that is, *speaking* arts,—those which are capable of expressing a meaning, or, in fact, serving the purpose of language. To this last, architecture of course cannot aspire. The sculptures or paintings on a building may indeed tell a tale most eloquently, but these are not architecture. That art alone, without their assistance, is dumb. The question therefore remains unanswered, 'what can it accomplish more than the merely pleasing (æsthetic) arts of cookery or perfumery?' Its addressing itself to a more perfect sense would not suffice to place it in a higher rank.

This writer endeavours to get over the difficulty by observing that a single art may, and generally does, combine two, or even all three, of these classes of merits; and this in various proportions. Hence he divides all arts into five classes:—1st, Those which are only *Technic*, as, for example, *carpentry;* 2ndly, *Technic* and *Æsthetic*, of which unadorned *architecture* is an instance; 3rdly, Arts combining all three kinds of merit, as *sculpture;* 4thly, Such as are only *Æsthetic* and *Phonetic*, as *poetry;* and, lastly, those which are only *Phonetic*, as *rhetoric*. He also gives in a tabular form the names of several arts, and opposite each name three numbers, together amounting to 12, and expressing the proportions in which each kind of beauty may, as he conceives, be displayed in the

both the common and the new acceptation are equally removed from the etymological one, which is simply *sensuous*, or *relating to the senses*. We cannot expect abstract ideas to be expressed otherwise than by a figurative or extended application of words originally meant for tangible objects. What does *correct* mean but *straightened?* What is *supercilious* but *high-browed?* All such words are metaphorical, but the objection to this *æsthetic* is, that the metaphor is not obvious either in the common meaning or in Mr. Fergusson's. However, to avoid ambiguity, I shall use this word as seldom as possible, *and never in the old sense*, because I think its place can then always be supplied by the term *artistic;* whereas I know of no word capable of standing for it in the new acceptation, as implying *beautiful without expression*.

most perfect production of that art. The following are a few specimens selected from this curious Table:

	Technic portion.	Æsthetic portion.	Phonetic portion.
Gastronomy . . .	7	5	0
Jewellery . . .	7	4	1
Architecture (Greek)	4	4	4
Music (Vocal) . .	2	6	4
Historical Painting .	3	3	6
Drama	2	2	8
Poetry	0	2	10
Eloquence	0	1	11

"Thus," adds he, "I conceive a perfect object of gastronomy to consist of 7 or 8 parts of plain hunger-satisfying food, and 4 or 5 of palatable ingredients; in jewellery, that 7 parts [twelfths] are made up of mechanical excellence of execution, 4 of beauty of form, or colour, or some such, and 1 in expressing a meaning, which it can do to a small extent, while the former art cannot,"—and so on through the Table.

He also believes the great advantage of architecture, as a means of studying art in general, to arise from its combining the three kinds of merit in nearly equal proportions: but he will only allow this to be the case in its very highest efforts, such as the Parthenon, and does not consider mere architecture, unadorned by sculpture or painting, to have any voice or phonetic merit at all; it only becomes phonetic "by attracting to itself" these higher arts,—in other words, by becoming a frame or gallery for their display. This system therefore does not help us any further,—it still fails to show in what respect the architect is superior to the picture-frame maker, or the cook. It makes a difference in the *degree* only, not in the *kind* of merit.

Does not the error lie in the omission of a class of beauty intermediate between what are here called the Æsthetic and the Phonetic classes, but distinct from both? Between "mere æsthetic beauty," *without expression*, and the phonetic art,

capable of telling a tale,—of being "*substituted for language*," there is a very wide hiatus. Must we not here insert another class of art,—a class possessing *expression, but not speech*,—totally incapable indeed of telling a tale, yet perfectly capable of expressing various emotions,—quite unable to stand in the stead of *human* language, but quite equal, or superior, in compass, to the language of *animals?* This dumb expression is common to all the arts commonly called 'fine,' and it is certainly a merit distinct from the phonetic quality, because incapable of *describing*, of *asserting*, of conveying information. Equally certain is it that this quality is not æsthetic (in Mr. Fergusson's sense of the word), because not necessarily pleasing,—and more than æsthetic, because capable not only of pleasing, but of pleasing in several different ways,—of exciting several different emotions, mournful, solemn, grave, or gay. The arts in which this quality is particularly exemplified, apart from the phonetic, I take to be chiefly the following:

1. Instrumental Music.
2. Architecture.
3. Landscape { Gardening. / Painting.
4. Portraiture (whether in painting or in sculpture).
5. Idealization of single figures (in the same arts).

Thus, to take the first, as being the best known or most commonly appreciated of these arts, every one perceives the difference of expression between festive and plaintive, martial and sacred music; nearly every one is affected with the precise emotion which the notes are intended to convey. But this is all,—they have expression, but no *meaning*, properly so called; they describe nothing, they tell nothing. I speak not for myself, who am totally ignorant of this art, but for masters and enthusiasts in it. I am quite aware that this is heresy to them. They tell us (and I believe with perfect honesty) that they can understand the interpretation of a piece of music, the occasion for which it was composed, the

scene it describes, the story it tells. Well, let them prove it. Some Germans have lately attempted to do so,* and have thereby at once proved their honesty, and exposed their complete delusion; for different enthusiasts have found the most amusingly different scenes or stories in the same notes, and no two give us the same version. It is not uncommon to be told of good songs, that their notes almost *speak* the words; but I never found any one who could decipher from them a single syllable, much less the general heads of the story.

Whatever musicians may say, their art in its highest efforts, and with all possible refinements, is still only a *dumb* art, no more capable of being *phonetic* than is architecture. An overture without words can express nothing more than a building without phonetic sculpture or painting. I should think music and architecture might probably be placed exactly on a par in this respect, as having about the same compass of expression,—capable of conveying the same variety of emotions, and with the same distinctness, provided we cultivated both with the same purity, or had nothing to vitiate and benumb our faculties in one more than the other. Of course, music acts most strongly on us, because it addresses us through a sense that is completely at its mercy, a sense that cannot but receive what is offered to it, a sense that can hardly receive or distinguish two impressions at once, a sense that hardly has the power of rejecting or putting aside a more forcible sensation to attend to a weaker one, and, moreover, a sense that is not continually in action. It is easier to see things without looking at them, than to hear music without listening to it. We cannot be perpetually hearing music; but the dweller in towns is perpetually seeing architecture, or some wretched parody on it: and as the existence of definite expression in architecture is not acknowledged, or not acted upon,—and architects can do nothing but copy indiscriminately whatever takes their own or their employer's fancy,—the result is just the same as

* See 'Athenæum' for 1848, p. 1216.

if all sorts of music were to be played indiscriminately, at all sorts of places, on all sorts of occasions. We should soon cease to distinguish mournful from gay, or sacred from profane, and should learn to deny altogether the existence of such a thing as expression in music, just as thousands now deny it in architecture.

Now, upon examination, we shall find it is *this* quality—*expression*, and not mere æsthetic (or unqualified) beauty, which entitles the work possessing it to a place among productions of Fine Art. Nor is it any objection against this to say that the finest works of antique sculpture (an undoubtedly fine art) are without expression. This is narrowing the application of the word to one particular kind of expression, that of passions or emotions, by the features. This is what the authors of these statues carefully avoided; it would be a great defect if it had not been avoided: it would have rendered them statues of men, which was not intended. They were not even meant for the gods of the vulgar pantheon, but for the gods of Socrates or of Cicero. But is the beauty of these works, then, merely an unqualified power of pleasing, like that of carved foliage or geometrical tracery? Has it no differences of character, (I do not mean style,) no differences in total expression?—no different ways of pleasing, by addressing itself to different faculties, or exciting different emotions? Is there no difference between an Apollo and a Hercules, a Jupiter and a Bacchus, *more than* between different schools of ornament or different styles of tracery?

Mere ornament does not possess expression. The different styles of it,—as Greek scroll-work or Arab scroll-work, Gothic tracery or Moorish tracery, Elizabethan or Rococo,—all please in one way, and have no difference of *expression*, as long as they do not introduce representations of architecture or higher arts. Hence mere decoration cannot be regarded as a fine art.

It is the same absence of expression which prevents the arts of cookery or perfumery from taking the place which the author above mentioned would concede to them among the

Fine Arts. They are excluded because they can only please in one way. A flavour or a smell cannot be solemn or cheerful, grand or elegiac. Though Burke thought there ought to be such a thing as a sublime odour, he never pretended to have smelt one, nor does any one believe in its existence. We must not confound essential differences of expression with those which arise accidentally from our own associations. Thus, to a native of the Continent, the smell of incense may become so associated with its devotional use as to seem in itself solemn and venerable. Few perfumes please us more than that of elm-blossoms, from its association with the return of spring,—few less than that of vinegar, because it reminds us of a sick bed. But every one knows all this is purely accidental,—that a protestant finds nothing imposing in the smell of incense, that the elm-blossoms would not smell cheerful and vernal to a native of a different zone, nor the vinegar sickly to one to whom it was entirely new.

This influence of association extends into all the arts, to the great detriment of the higher ones, especially architecture. I know not whether this evil be detected much in the sister art of music; but it cannot be so hurtful there, because real differences of expression, independent of association, are universally acknowledged; whereas in architecture their very existence is questioned, or at least generally overlooked, and consequently these accidental associations are actually set up in their place. Here is a glaring instance:—A few years ago the very elegant and purely common-sense treatment formerly applied to domestic and palatial buildings by the Florentine school of architects, was revived and introduced into this country by Mr. Barry, who employed it first in the Travellers' and Reform Club Houses. The hint was followed as it deserved to be in a variety of buildings to which it was well suited, perhaps better suited than any other manner. However, we are told in a criticism of one of these,* that "it has

* 'Companion to the British Almanac' for 1846, p. 213.

in its general aspect quite as much or even more of the club-house than of the ordinary villa character;" and of another* (an assurance office), that "it might pass for a club-house." The critic does not appear to regard this in either case, indeed, as a fault: but what we have to observe here is the singular force of association, by which the use of this manner in *two* London club-houses suffices to stamp it forthwith as a sort of *club-house style*,—if not absolutely unfit for other purposes, at least peculiarly appropriate to this. If such a principle of criticism be once allowed to creep in, nothing more is required to complete the utter ruin of this once noble but now deeply degraded art.

It is most important for all who attempt either to practise or understand this art, to be perpetually on their guard against the insidious attacks of this error, the mistaking false (*i. e. acquired*) expression for that which is *natural*, and therefore permanently true. I cannot but consider this the chief source of the acknowledged great utility of travel to the architect. Its use is not to show him much of the world, but to teach him how little of it he has seen. Nothing but the emancipation from narrow local prejudices will set a man thinking and searching in earnest to distinguish what is local and accidental, in beauty and expression, from what is universal and essential.

I do not mean to imply that time-hallowed associations (such as that, for instance, which connects the Gothic style with our religious edifices) are to be wantonly broken through; only that, when any such are proved to be mere associations, they may (though still respected) not be suffered for a moment to have preference before such as may have been proved to be not accidental, but essential. Use, says the proverb, is second nature; but it is not therefore to be placed above Nature herself. Sir J. Reynolds speaks of these accidental associations under the name of "apparent truths," or "truths upon

* 'Companion to the British Almanac' for 1849, p. 238.

sufferance," and requires them to be respected in proportion to their stability or duration, or as their influence is more or less extensive, but never allowed to supersede real immutable TRUTH. They must have sufferance only as long as they do not oppose this. Let them be reconciled with it, if possible,—if not, ruthlessly swept away. They must yield to it; it must never yield to them.

The province of expression must not be overrated. We hear it often said that a building should express *its destination*. This is impossible, not because it is beyond the reach of architecture, but because it is beyond the reach of *expression* in any art. The destinations of modern buildings are more numerous than the distinguishable varieties of expression, not only in architecture, but in any thing else,—in music, sculpture, painting,—in nature itself. Expression is not a language; its words are too few to serve this purpose. They might be counted on your fingers, perhaps on one hand; and perhaps, if they were thoroughly investigated, they would be found to be the same in number in all arts, being, in fact, nothing more than the representatives of the simple qualities or emotions of the mind. Greater variety can be had only from their mixture in varying proportions, as all the colours in nature may be formed from three. In objects seen or examined most frequently, as the human countenance, we may discriminate by the *poco più* and *poco meno* of this or that element, a greater number of *shades* of expression, than in objects to which we are not so habituated. Hence, turning from the face to the body, which is seldom seen, or to the unimpassioned whole of the ideal statue, we find the characters to be distinguished there extremely few. "Take from Apollo his lyre, from Bacchus his thyrsus and vine-leaves, and from Meleager the boar's head, and there will remain little or no difference in their characters. In a Juno, Minerva, or Flora, the idea of the artist seems to have gone no further than representing perfect beauty, and afterwards adding the proper attributes [insignia] with a total indifference to which they gave them."

This remark of a great artist* would lead one to doubt whether even in the higher arts the province of expression be at all more extended or subdivided than in architecture or music, *i. e.* whether it include a greater number of simple elements; and observe, that as simple colours are weakened and diluted by mixture with each other, so the artist who aims at clear and forcible expression of any kind, can only attain that end in proportion as he avoids all mixture. The more shades we make, the less forcible must each become: now, in no art is attention to this so necessary as in architecture, which has been all but destroyed by the wanton, unintentional mixture of all the colours on its palette into one unmeaning neutral tint. There is now no hope of recovering them but by careful analysis, and no means of awakening the deadened sense to their distinctions, but by the exhibition of each *unmixed*, or as much purified from the others as possible. The revival of forcible, unmistakeable expression in architecture can be pursued only by renouncing all attempts at mixed expressions; and however numerous the destinations of buildings may be, there can be no attempt to mix a different shade for each.

To distinguish a club-house from a mansion is beyond the province of expression in any art. It is not to be done by expression, but only by language, and architecture does not pretend to be phonetic. If you want to distinguish the destinations of these buildings, the best way is by writing up their names. It was not always the best way. Hieroglyphics, arrow-head letters, insignia, coats of arms, were each preferable in their day, simply because they were more extensively understood, and *for no other reason*. You may make a language of any thing,—rustic quoins, Gothic windows,—provided people will agree to understand them alike, and take this for *church*, or that for *club-house;* but what is the advantage of substituting a new and extremely limited language, understood by very few, for an established and incomparably more copious language, understood by the whole nation? It is harmless, of

* Sir J. Reynolds, Discourse x.

course, in itself,—merely an innocent pastime; but it is by no means harmless if it usurp the place of artistic expression,—of that which alone distinguishes a *fine* from an *ornamental* art,—the architect from the decorator. Now, this it has a decided tendency to do. Real essential difference of expression is a thing so nearly lost already, its principles so little understood, and so difficult for any one of us to puzzle out for himself, that we are ready to snatch at any thing that may seem to offer a substitute for it, and to take any trouble to escape the real labour of thought. Hence, while sometimes accidental association, sometimes a conventional language, seeks to palm itself off for this sterling coin, it is not to be wondered at, that some are led to doubt even the genuine article itself.

Thus it happens that some deny the existence of permanent and essential differences of expression in architecture. Of course the architecture of which they speak is not a fine art at all. Accomplishing only the first and second objects described above, and falling short of expression which, alone could place it among the Fine Arts, it has no more title to be ranked with them, than mere ornament, or than perfumery has; for even smells can acquire expression by association, and, according to these people, architecture can do no more. I have been perfectly amazed by the two following passages in the 'Encyclopædia Britannica,' on this subject: "The merit or demerit of a composition is not at all affected by the use to which the edifice is applied."—"Moreover, there is nothing in any one 'order' [Doric, Ionic, or Corinthian] that, were it not for custom, would not be thought as fitting in any other, as in that to which it may belong." Perhaps not to Londoners,—utterly deadened to this art, and rendered incapable of ever understanding it, by the atrocious misapplications of its forms, perpetually before their eyes,—they might see no harm in a Doric entablature placed on Corinthian columns; but it would not on that account be a less flagrant violation of the immutable principles of right and wrong,—it would not be less false and *unnatural* than combining the parts of different animals,

or joining the head of a Hercules to the body of an Apollo. The congruity of the parts of each order or style, and the incongruity of mixing them, we propose in a future chapter to trace back to natural principles, but meanwhile, of course, there is no compendious answer to these assertions, except an appeal to the general sense of mankind, or of the majority, not in one country or age, but in all history. This majority has testified to the existence of expression in architecture, independently of all associations; and all minds educated and cultivated in the subject bear the same testimony, and find the same peculiar expressions in the same buildings; whether grave or festive, meek or ostentatious, awful or playful, majestic, reposing, agitated, or aspiring.

'Oh,' says the objector, 'then a special education and culture is necessary, is it, in order to perceive these differences of character? Your distinctions, after all, then, are only conventional signs, only a kind of symbolism or heraldry, or freemasonry, intelligible to the initiated, and to no one else. This is a very different case from that of *music*, no education is required to understand the differences of expression in *that*.' Granted—neither is any education required to feel the expressiveness of our art: give us the mind wholly uneducated in it; give us the rustic or the child, unused to cities, uncorrupted by the sight of abused architecture, and he shall immediately feel in the true art all its intended effects,—shall be awed by the sublime majesty of the Doric, or raised by the heavenward aspiration of the Gothic temple; soothed by the mild repose of Palladio, and enlivened by the playful fancy of Scamozzi; sobered by the severe purity of the Greeks, and relaxed by the picturesque riot of Vambrugh; attracted by the inviting urbanity of the Vicentine villa, and repelled by the gloomy frown of the Florentine castle. Among pieces of true architecture, he shall not need to ask which is the temple, and which the forum. He shall know at a glance the festive theatre, and the stern hall of hood-winked justice, the modest hospital, and the patrician palace. He shall not mistake what

is public for what is private, nor fail to distinguish which buildings are dedicated to business, which to pleasure or to repose. All this is expressed by art, not conventionalism, and is intelligible to the perfectly *artless*, as well or better than to him of cultivated taste; and why? Because the cultivation required does not consist in *learning* but in *unlearning* the prejudices of a life,—in getting rid of the mass of falsehood imbibed during years passed in the presence of an indiscriminate mixture and misapplication of every thing that is expressive in architecture,—the abuse of employing it all alike, for the sake of *ornament* instead of *propriety*, fancy instead of discretion. In the culture required to feel rightly the effects of this art, there is nothing to be learnt, but every thing to be unlearnt. The savage and the highly cultivated are alike in this respect; or rather, the acme of this cultivation is to approach as near as possible to the feelings of the totally ignorant,—of one to whom all architecture is new. But to those brought up in modern English cities this is perhaps impossible, (I do not mean in its perfection, but in such degree as to be useful,) so completely must their natural sense of right and wrong become in this respect deadened and subverted, by the time their education is complete.

If there be no differences of expression in architecture, then is it no fine art, but a trifle beneath the notice of an educated man, and which must soon find its level, by sinking into the hands of mere constructors and decorators.

Definite expression, though almost forgotten and become a dead letter, in modern English architecture,—though almost above the reach of the art in its present state, is yet not the highest aim of that art in its complete form. It is acknowledged that this, in common with all the arts of expression, presents in its most excellent works a merit or merits not to be described or conveyed in any other medium than the art itself,—moreover, a degree of excellence superior to mere expression, because capable not only, like that, of reaching and affecting the mind, but also of elevating, refining, or improving it.

In the want of a better term, this portion of each art has been called its poetry,—a very questionable application of the name of one art to express a particular portion of another. However, we must take words as we find them, and content ourselves with distinguishing the *things* to which they have been applied.

Poetry, in its ordinary and strict acceptation, cannot exist where there is no language—no assertion made—no story told—no idea stated. Now, we have denied to architecture the power of doing this. The phonetic arts, viz. historical painting and historical sculpture, may do it: they speak a language—a natural and universal language,—and therefore may be poetical in the strictest sense of the word. But architecture, like music, has no natural language, and is only degraded when it attempts to speak an artificial one by means of conventional signs. Nothing can be pushed out of its proper sphere without being degraded: in a lower sphere it is cramped and its highest qualities stifled; in a higher, it is equally degraded, because its inability to do what is required of it, is exposed. Architecture is not exalted by attempts to render it phonetic,—to make it serve the purpose of a language.

Where there is no language, there can be no poetry in its strict sense; yet we hear of the poetry of music and of architecture; hence this term must here be taken in a more extended sense. It may be understood in three ways: *first*, as applying to the untaught portion, or that portion which transcends the rules and theory of the art in their present state; *secondly*, as including those beauties or perfections in each art, which are not, or have not been, conveyed in any other,—consequently, not in words; or *thirdly*, as applying to those qualities by which its highest productions are calculated to produce, not only a transient emotion, but a permanent effect on the beholder. In either case, the precise limit of the application of the word must be vague: the lowest production in which any poetry may be considered to exist, cannot be exactly pointed out; but of its existence in the highest efforts of the art, there is no difference of opinion.

Whoever wanders among the hundred columns of the great hall of the temple of Karnac; whoever, by the assistance of designs or models, and of the fragments in the British Museum, restores and rebuilds in his mind's eye, the small but glorious temple of the Athenian goddess; whoever climbs the ruined stairs of the Colosseum, to the edge of its artificial crater; whoever enters the cathedral of Amiens, or walks round the exterior of that of Salisbury; whoever views any one of these works of architecture, and finds no poetry in it, must be incapable of discovering it in any thing else—in nature or in art.

There is, then, or rather there *has been*, such a thing as a poetry of architecture; and we may therefore, including this, consider the whole aim of 'architecture proper' apart from building, under four heads,—politeness, beauty, expression, and poetry. It has been the object of the present chapter to point out to the reader this fourfold use of architecture: *first*, as a courtesy due, from every one who builds, to humanity, on whose ground and in whose sight he builds; *secondly*, as a further refinement of this courtesy into positive beauty, by attention to whatever may please the mind; and preference of what may please its higher faculties, before that which may please the lower, when they are incompatible; (the justice of this preference constituting the difference between right and wrong in art, commonly called good and bad taste;) *thirdly*, as a mode of conveying to the mind definite emotions, suited to, and even indicative of, the character and general destination of the work; *lastly*, as a means not only of affecting, but of exalting or improving. The architecture which attains only the first of these objects is no more than a *polite* art; when it reaches the second, it becomes an *ornamental* art; by attaining the third, (and not otherwise,) it gains a title to be considered a *fine*, that is, an *expressive* art: in those very few of its productions in which the last purpose has been accomplished, does it deserve to be called a *high*, a *poetic* art. As the first, its aim is to *conciliate;* as the second, to *please;* as the third, to *touch;* and as the last, to TEACH.

CHAPTER II.

OCULAR AND FORMAL BEAUTY — FIRST GENERALIZATION THEREON — UNITY AND VARIETY — GRADATION AND CONTRAST.

"It is the natural progress of instruction to teach first what is obvious and perceptible to the senses, and from hence proceed gradually to notions large, liberal, and complete, such as comprise the more refined and higher excellences in art."—SIR JOSHUA REYNOLDS, *Discourse* VIII.

IN all decisions respecting the relative beauty of objects or of qualities, we find no source of difference and misunderstanding so fertile as the confusion between *ocular* and *mental* pleasure—that which addresses itself to the external sense alone, or through it to the mind alone. Continual mistakes, arising from this confusion, run through every thing we see or hear on the subject, from the simple 'I like it,' or 'I do not like it,' without giving a reason, up to the most subtle and elaborate theories of beauty and taste, as those of Hogarth, Burke, Price, and Alison.

It seems, therefore, that nothing is more difficult than to define the exact boundary between the provinces of the mind and of the eye; or, in an object that pleases both, to distinguish which of its qualities or excellences address themselves to each exclusively of the other, and which (if any) are calculated to afford pleasure both ways: yet nothing is more necessary than this in the outset of any rational inquiry into the truth or falsehood of an alleged rule or principle, in architecture or any other fine art.

So great has been the difference of opinion on this point, that some authors (Milizia, for instance) have denied the ex-

istence of ocular beauty of form, *i. e.* they deny that any form is more pleasing than another to the mere sense of vision, apart from mental inferences or associations; which has led, on the other hand, to the question, whether this sense differs from all the others, in having no preference of one sensation to another — no likes or dislikes.

Such an anomalous deviation from the analogy that obtains between all the other senses cannot for a moment be admitted; and, accordingly, we shall find that the eye has its choice and preference of one simple sensation to another, not perhaps with regard to *forms*, (which cannot be regarded as simple sensations, or even sensations at all,) but certainly with regard to *colours*, which are the only ocular qualities coming under this denomination. Children and savages, who, in the choice of colours, consult nothing beyond the immediate gratification of the eye, invariably prefer a certain class of colours—those termed crude or positive—to another class, those which we term dull colours or tones. Now, that the preference shown to the former is purely a matter of sensation, with which the mind has nothing to do, will be plain from the fact that the mind has, in these and most other cases, no knowledge whatever of what constitutes the difference between these sensations: it knows nothing of any physical resemblance that may exist between the colours included in each of these classes, which does not apply to the other class; nor have we any name to distinguish these two qualities otherwise than by their pleasing or displeasing effects. Thus we apply the term *bright* to the more pleasing class, but every one perceives that this is only done by a metaphor, (because light is more pleasing than darkness,) for the pure or positive colours are not necessarily more *luminous* than the others, but only more eye-pleasing. The purer of two colours may be, and often is, the darker; and then, in comparing them, we discover the insufficiency of this word *bright* to express what we mean, and are therefore obliged to replace it by *rich*,—another metaphor, observe, still implying nothing more than fine or pleasing.

Thus, the preference of one colour to another, abstractedly, without reference to fitness or association, must be regarded as merely and wholly a sensuous preference, like that of one simple sound or one flavour to another. The analogy, therefore, between the eye and the other organs of sense, is complete and unbroken, without any necessity for supposing it to have a preference of one *form* to another.

The discovery indeed of a physical reason for these preferences, in the case of two of the senses, sight and hearing,—the discovery *why* red is more pleasing than brown, or blue than grey, or the sound of a string than that of a stick,—that is, the discovery of some describable quality common to the red and blue and other colours of the same class, and to the string and other musical sounds, which quality is not possessed by the dull colours and the unmusical noises,—must be considered one of the greatest triumphs of inductive science. It is now perfectly known in what this difference consists, and, moreover, that it is *the same* in both senses. For, as both light and sound affect their respective organs by an inconceivably rapid repetition of vibrations or pulsations, so, in both cases, it is found that the pleasurableness of the sensation, whether of sound or colour, increases just in proportion as these vibrations are more regular, isochronous, or equal-timed,—that, in the colours of the spectrum, or the sounds of a glass bell, they are perfectly so,—and that the duller or more dead the colour or sound becomes, the more irregular are these vibrations, till, when they are totally irregular, we perceive only a sensation, not a pleasurable one, a wooden sound of no definite note, or a neutral tint of no definite colour.*

* An eminent artist has observed respecting *tone*, "a property or quality of colour, the opposite of gaudiness or harshness," that "it bears that relation to colours in general, that the quality of a musical note does to that of an unmusical sound or mere noise. In music this is known to depend upon the vibrations of the air being *isochronous*, or at regular intervals. Should it be discovered that colours are also produced by vibra-

But for how many ages were these differences perfectly well seen and heard, and these preferences shown,—by how many millions is this still done,—without a possibility of knowing in what the differences consist? We hence learn that the mind can have no share in appreciating this lowest species of beauty.

So also the *harmony* of colours, that is, the preference given to a juxtaposition of two certain colours, rather than to that of other two, though equally bright or pleasing when seen separately, must be wholly an ocular beauty; for the mind cannot (by the direct evidence of the unaided sense) discover any relation between red and green, for instance, which does not exist between blue and green. We can only say that the former harmonize together, and the latter do not. As the mind knows, in general, nothing at all about this harmony, the mind can have nothing to do with the appreciation of it. It required the utmost refinement of modern science to discover that this case is analogous to that of two harmonizing sounds; and even in this latter instance, though most persons would know whether the two notes were in harmony or not, the finest musical ear in the world would never discover from the sound alone (unless he had studied acoustics or seen the strings) that the lengths or tensions of those strings bore

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tions, tone, in its present application, may prove to arise from a similar regularity." (HOWARD'S 'Colour as a Means of Art,' p. 27.) But physical optics exactly contradicts this ingenious surmise, by disclosing that crude or gaudy colours correspond to musical sounds, and that it is precisely the sober 'tones' of colour, that are non-isochronous, like noises. The error evidently arose from the artist, absorbed in the higher excellences of his art, mistaking a mental for an ocular beauty. If he had observed the conduct of children, who look only for the latter, he would have perceived that it is the crude positive colours which are the sweets of the eye, and that the tones are its bitters, or, at least, its insipid ordinary food; in fact, that whenever the latter are preferred to the former in a picture, it is from a mental not an ocular preference,—and a sensuous beauty is sacrificed, as it should be, to an intellectual one.

certain ratios to each other, and that when the notes were discordant, these ratios were incommensurable. It was very right for the contemporaries of Aristotle or Vitruvius to reason from this to all manner of hidden sympathies between the mind and mathematical ratios, which it perceived without being able to state,—which it discovered, and yet did not discover. This was the best way of accounting for the facts *then*, the highest generalization that the science of those times rendered possible. It would be a disgrace to science at present, because we have a plain physical reason which not only generalizes all the phenomena of harmony and discord, but brings them under the very same principle that distinguishes between notes and noises. For it is evident that two sets of vibrations which are each regular in itself, and which bear a simple ratio to each other, by uniting together, form a vibration which is also regular and therefore musical; but two vibrations which, however regular each may be alone, bear no commensurable ratio to each other, will, by their union, produce a totally irregular vibration, *i. e.* a noise.* So also

* We may illustrate this principle by supposing two clocks placed side by side, one beating every second, and the other twice in a second; the combination of the two beats will evidently produce a regularly repeated sound. Suppose the beating of both to be 100 or 1000 times more rapid, and you have the case of two notes sounded together, having the interval of an octave. If one clock beat seconds, and the other thrice in two seconds, or five times in four seconds, a regular sound would also in both cases result; and this would resemble the case of two notes differing from each other by a musical *fifth* in the former case, or a *third* in the latter. But let one clock beat as before 3600 times an hour, and the other 6211 times; as these numbers have no common measure, a whole hour must elapse before the beats will recur in the same order as at first, so that, in listening to this sound, we shall perceive no regularity whatever. This is the case with the vibrations of two discordant notes. They may also be *incommensurable*, so as never to coincide in any length of time. Thus, suppose a grating of bars one inch apart (including their breadth) to be laid on another, of which the bars are $\frac{2}{3}$ of an inch apart, or any other distance exactly expressed in parts of an inch, the two will combine to form a regularly striped pattern, which will be larger or broader, the more

when the nerve has been affected with a particular vibration, it will necessarily accommodate itself with more ease to a new vibration, the more simple the ratio that this vibration bears to the former; so that those which bear the simplest ratios to each other, are most in harmony with each other. Such is the plain physical rationale of harmony, which shows it to be altogether a matter of the ear and not of the mind.

Harmony in colour is perfectly identical with this, only on account of the comparatively limited range of the eye's sensibility to vibration, as compared with the ear's (Sir John Herschel considers the whole compass of the scale of visible colours to correspond only to the interval called in music a minor-sixth): it happens that in this case there is only *one* harmonic ratio; that is to say, that, though a given note in music may harmonize with *many* others, as the third, fifth, octave, twelfth, &c. above it, and the same below it, a given colour in the spectrum can only have *one* harmonic, viz. that vibration which in music would be called the *third*, either above or below it, (never both, because the scale is not long enough to include them,) so that, between the vibrations of two colours that harmonize, there is always the same ratio as between the two *nearest* musical vibrations that harmonize, viz. the ratio of 4 to 5.* But no one could discover this

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complex the ratio between the two gratings may be; the breadth of one alternation of the pattern being the smallest space that contains an exact whole number of each set of bars. But let the interval in one grating be an English inch, and in the other a French centimètre; or let one be an inch, and the other the *diagonal of a square inch;* as they are incommensurable, no regular alternation can occur, however far the gratings may be extended. This is, in general, the case with two dissonant vibrations.

* As few persons seem aware of the universal application of this rule to harmony in colours, we have inserted the following Table, in which the first column contains the names of the simple colours; the second column, their number of undulations in an inch, according to the measurements of Sir J. Herschel. This number being increased or diminished

from the inspection of a red and a green, or any other two harmonic colours; so that this, no less than the abstract beauty of single colours, is purely an ocular beauty, arising from the retina of the eye, when impressed with a certain vibration, accommodating itself most easily to a new vibration

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in the ratio of 4 to 5, or 5 to 4, gives that in the third column, corresponding (according to the same authority) to the colour named in the last column, which is, in every case, the harmonic or contrast to that in the first.

	Undulations per inch.			Undulations per inch.	
Extreme red [crimson]	37640	× 1·25	=	47050	.. Green.
Red	39180	× 1·25	=	48975	.. Blueish green.
Reddish orange.....	40720	× 1·25	=	50900	.. Greenish blue.
Orange	41610	× 1·25	=	52012	.. Blue.
Orange yellow	42510	× 1·25	=	53137	.. Indigo blue.
Yellow	44000	× 1·25	=	55000	.. Purplish indigo.
Yellowish green.....	45600	× 1·25	=	57000	.. Violet.
Green	47460	÷ 1·25	=	37968	.. Crimson.
Greenish blue	49320	÷ 1·25	=	39456	.. Red.
Blue	51110	÷ 1·25	=	40888	.. Orange red.
Indigo blue	52910	÷ 1·25	=	42328	.. Yellowish orange.
Indigo	54070	÷ 1·25	=	43256	.. Orange yellow.
Purplish indigo.....	55240	÷ 1·25	=	44192	.. Yellow.
Violet	57490	÷ 1·25	=	45992	.. Yellowish green.
Extreme[reddish]violet	59750	÷ 1·25	=	47800	.. Green.

It must be remembered that each colour in the first or last column is harmonic, not only to the one placed in a line with it, but to all modifications thereof; that is, (1), to all its *tints*, from the purest or most intense colour up to white; (2), to all its *shades*, from the same pure colour down to black; and (3), to all its *shaded tints* or *diluted shades*, formed (in painting) by mixing it with both white and black in any proportion, or, in other words, with any *neutral* tint in any proportion; or lastly, by mixing it with its exact harmonic colour in any proportion; for every colour neutralizes an equivalent portion of its opposite colour, so that painters who wish to avoid blackness often paint the shadows on a coloured object, not with neutral tint, but with the colour opposite to that of the object; for, by this means, its colour may be lowered most with the least diminution of luminosity.

that bears a simple ratio to the former one. Colours that harmonize are commonly said to form *contrasts;* at least, such is the case if they be both of equal purity and intensity, which, however, is not necessary to the harmony. A nice distinction has been attempted to be drawn between *simultaneous* and *successive* contrasts, but the fact is, that they are always successive; for, when two colours are placed in juxtaposition, the continual motion of the eyeball brings the image of each, alternately, over the same portion of the retina; and each point of that delicate nerve is successively exposed, in an inconceivably short time, to each and all of the colours that may happen to be before us.

On the whole, it would appear that the laws of colouring, as a gratification of the *eye* only, are simply these:

1. That the more isochronous the vibrations of any given colour may be, the more pleasing will it be in itself, apart from fitness or association with others.

2. That, as these isochronous colours, however, have a more exciting effect on the retina than those which are of the same brightness but non-isochronous, the repose afforded by a change from the former to the latter is also grateful; so that we should follow the example of nature's works, throughout which the sober, mixed, or subdued *tones* are the rule, and the pure or isochronous *colours* the exception: for it is a less evil to be unable to find excitement, than to be unable to find repose.

3. That *variety* of colouring is abstractedly (without reference to fitness, &c.) more pleasing than monotony, especially when the colours that adjoin each other have their vibrations in the harmonic ratio of 4 to 5, that is, when they form contrasts, and still more when they are varied in intensity or brilliancy, or both, as well as contrasted in quality.

4. That, as variety is an exciting quality, owing to the rapid changes which each point of the retina undergoes, the change from variety to sameness of colour is required for repose; so that here, again, we should imitate nature, in which

sameness of colouring is the rule, and *variety* the exception; the former being found in all large and grand objects, and broad surfaces, and the latter only in small and scattered organisms.

This would lead us to infer that in architecture, or at least in all its grander forms, varied colouring should have as little place as it has in the elephant, the oak, or the mountain-chain. In a future chapter we will endeavour to prove that, in opposition to the new architectural sect of polychromists, the general opinion of civilized man for the last two centuries, on this subject, is the correct one.

A proper understanding of the nature of physical harmony, whether in sound or colours, will guard the reader against the immense abuse which mystics make of this plain common-sense principle, in the theories of what is called *proportion* in architecture;—a sort of beauty made easy, an artistic philosopher's stone, by which baser productions are to be transmuted into works of art,—expressions of thought,—without the trouble of thinking, only by applying arithmetical rules. It will be seen that, while the analogy between sounds and colours is a real one as far as it goes, there is no sort of foundation for the extension of these ratios to the *dimensions* of visible objects, except the active imaginations of ancient ill-informed philosophers, who in these speculations did their best, while their modern followers do their worst. Why should the height and breadth of a window have a certain simple ratio to each other?—Because, says Vitruvius, two strings of the same thickness and tension, having their lengths in this same ratio, will yield concordant notes. The logic is truly admirable; but it was a very fair deduction for the science of that day, and only unfit for the present because we happen to know *why* the notes harmonize, and that it is for a reason which has nothing at all analogous to it in the case of the window. If there be any architectural analogy, it is in the case of equally spaced rows of objects, placed one tier over another, as the ornamented mouldings of a cornice, which

in many ancient buildings are *not* (as is now the universal practice) regulated so as to harmonize, *i. e.* so as to have an exact whole number of leaves on one moulding, comprised in the same breadth as an exact whole number of dentils in another moulding, or of eggs and anchors in another.

Milizia, even without appearing to know the rationale of harmony, ridicules these attempts to apply it to forms and dimensions, and observes that though every one talks of the harmony of architectural proportions, it is a discovery yet to be made. "For a length of time, many ingenious persons have tormented themselves to find it out, and nothing has resulted but vague, general, and entirely arbitrary ideas." He gives a long list of those whose talents have been wasted in this fruitless search, from François Blondel down to our countryman Robert Morris, who laid down seven definite forms of parallelopipeds proper for building;* of which Milizia observes, "It is doubtless true that in these seven proportions all edifices may be elegantly constructed, but it will also be found that these proportions may be altered and destroyed without the edifices losing one particle of their beauty."—"It seems," says he elsewhere, "that musical concord is confined to a point, away from which, the ear suddenly encounters dissonance. On the contrary, in vision, the beautiful is not reduced to a point, but appears to extend over a certain circumference, within which limit we are at liberty to stray. Is an edifice harmonically proportioned?—How beautiful! If its dimensions are altered ever so little, though we may not

* These form swere,—I. a cube; II. a square prism whose length is once and a half of each of its other dimensions; III. a double cube (like the new House of Lords); IV. a parallelopiped whose three dimensions are as 3, 2, and 1; V. one whose dimensions are as 4, 3, and 2 (like Solomon's Temple, exclusive of its sanctuary); VI. one whose dimensions are as 5, 4, and 3; and *lastly*, one having them as 6, 4, and 3. No limitation is made as to the position in which they are to be placed, whether on an end, a side, or an edge. Thus the harmonic theories would lead to the conclusion that a room admired for its proportions, may have its breadth and height transposed without losing its beauty!

see it, there is an end of harmonic proportions." But a more conclusive argument still, is that drawn from the fact that the apparent (visual) proportions, or those of the image formed in the eye, vary with every movement of the spectator, and bear no constant relation to the real proportions.

These reasons seem quite sufficient for rejecting altogether the notion of an *ocular* pleasure derived from certain relative dimensions rather than others, and for believing that whenever such preference is shown, the reason must be sought in the mind, and not in the eye. Alison says, "If there were any original [*i. e.* sensuous] beauty in such proportions, they would necessarily be as certain as the objects of any other sense, and there would be one precise proportion of the three dimensions of length, breadth, and height, solely and permanently beautiful. Every one knows, however, that this is not the case: no artist has ever presumed to fix on such proportions; and so far is there from being any permanent beauty in any one relation of these dimensions, that the same proportions which are beautiful in one apartment are not beautiful in others. From whatever causes these variations in the beauty of proportion arise, they conclude immediately against the doctrine of their original beauty." * It may be observed, that the preference of one 'proportion' (or relation of dimension) to another, is far less marked and definite in the exterior than the interior of buildings; and far less in the whole or any considerable part, than in the smaller parts or members; and in these we can generally discover a cause in some mental expression or association. Thus in all styles of architecture, a doorway, however large, is most pleasing when its height is about twice its breadth, because that is the form which convenience requires for a small door just large enough to admit one person, and therefore a door of a very different form (especially when lower in relation to its breadth) appears not human, but rather made for some animal. On similar

* Alison's 'Essay on the Sublimity and Beauty of the Material World,' chap. iv. sect. ii. Part 2. iv. 4.

principles we may account for all other beautiful or ugly relations in the dimensions of architectural members, of which we will examine several further on.

On the whole, it may be doubted whether there is any purely ocular beauty beyond those of colour explained above. In ascending from these, the lowest or most sensuous sources of beauty in visible objects, we do indeed meet next with a very universal source of pleasure in all the arts, concerning which much doubt may arise whether it is to be classed among the pleasures of sense or above them. This is the beauty of *equal-timed or equal-spaced repetition*. It applies equally to the eye and the ear, substituting space in the former case for time in the latter. The unmixed operation of the principle is seen in children placing objects in a line at regular distances, or repeating a set of unmeaning syllables over and over again to weariness. Yet the same principle is carried into the highest arts, and leads to the rhythm of poetry, or the equal spacing of the windows of a palace. In examining its nature, it may be urged, on the one hand, that as isochronism in vibrations, whether of sound or light, pleases the organ of sense, and not the mind, (since it cannot possibly follow or distinguish such rapid pulsations,) so we may infer that the same property in these far less frequent repetitions pleases us in the same manner, and is therefore not to be classed above mere sensuous beauties. On the other hand, it is remarkable that the beauty of a line of equidistant objects (a colonnade for instance) is universally admitted to be increased when it is seen obliquely, that is, when the perspective images formed in the eye are *not* equidistant. Thus it would seem that they are not so pleasing when *seen* to be equidistant by the eye, as when they are only *perceived* to be equidistant by the mind: and this would lead us to rank this source of beauty among intellectual ones; for we have something like a reason to advance on this side of the question, against a mere analogy on the other side.

I believe the chief charm of this quality in architecture is

to be traced to its expression of courtesy and consideration for the spectator. For every one must perceive that in a complex modern building the openings cannot be equally spaced, and at the same time made to suit the internal requirements, without a great deal of thought and contrivance, not a particle of which is thrown away, but always leaves its stamp on the work, and the quantity of which constitutes the value of every work of art. Nothing is more essential, therefore, to the first aim of architecture than this equal spacing: every deviation from it, without any reason appearing externally, is an obvious sacrifice of the spectator to the idol self, and hence a breach of courtesy, and, if very glaring, an insult.

There is another kind of beauty in visible objects, which is commonly, but perhaps falsely, supposed to speak to the eye; this is that kind of symmetry or uniformity which consists in an exact correspondence of form between the two halves of an object. To distinguish it from other kinds of uniformity, we will call it *the uniformity of halves*. We need hardly observe that it is the most universal quality in nature, pervading all ranks of organic life, from the leaf and the flower, up to man; and all separate and distinct creatures, even when inorganic, from a crystal to a world. Accordingly man has in all ages and countries imitated this principle of nature to the very best of his power, in every work that was intended to appear one separate and complete whole; and though some late critics have told us that a building containing distinct apartments is to be regarded as a collection of several things and treated accordingly, the world will never believe a mere assertion against the plain example of nature, whose practice it is, in an animal having no uniformity of internal parts, (a heart on this side, and a liver on that, and a stomach placed unsymmetrically,) nevertheless to contrive the external form with an exact correspondence of halves.

Though we constantly speak of this quality as being pleasing to the eye, there seems to be continual proof that it has nothing to do with the eye; for when is the image of an

uniform object (formed on the retina) uniform? Never in the case of a solid body; because even when the eye is exactly in the central plane of the object, though the outline be uniform, the lights and shades (far more striking to the eye) destroy that uniformity. Thus even the elevation of an uniform building ceases to be an uniform object as soon as it is shadowed. But, besides this, a deviation of the eye from this central plane, to any extent, is universally thought to increase the beauty of the view, though it destroys the uniformity of the outline, and renders it impossible that the ocular image can, under any effect of light and shade, ever be uniform. Thus it appears that the same uniformity which is a beauty in the object, is a defect in its image or picture. It is necessary to the enjoyment of this excellence in a building, that it be not *seen*, but *discovered* by the mind.

Consistently with this, we find that the uniformity of animals is actually most admired when it does not exist, being destroyed by the various positions into which the limbs are thrown; but the architect can draw no hint from this to apply to his *fixed* structures, for it must be remembered that the smallest *permanent* deviation from uniformity in the animal, is a deformity.

With regard to *beauty of form* in its more extended sense, it seems to be generally ranked above any of these excellences, (the beauty of colour, of repetition, and of uniformity of halves,) and yet is so constantly regarded as something addressed wholly to the eye, that it seems heresy to reject entirely this common opinion. There appears at least one preference so universally shown, as to render it probable that it may be in part an ocular one; this is the preference of curvilinear forms to straight-lined and angular ones. Something like a physical cause for this may be found in the muscles of the eyeball following with greater ease the curved outline, than the abrupt changes and reverses of motion necessary in travelling round the angular one. But further than this we get no help from such theories; they afford no reason

for the preference of one curve or curvilinear form to another, —a Grecian vase to a Chinese one, for instance. It is well known, however, that these preferences are not universal: moreover, among all nations, civilized or barbarous, only *one* appears ever to have discovered, independently of foreign aid, the art of giving its productions such forms as should excite the admiration of all cultivated and refined spectators from every country and in every age. While the agreement of all these, however, indisputably proves the beauty of the Greek forms to be real, and founded on something fixed and immutable, the non-perception of their excellence by millions of the tasteless and vulgar, however perfect may be their eyesight, proves as distinctly that it is not a matter of sensation at all. The eye may possibly have a liking for curved lines rather than straight, but certainly not for one curve more than another: if it had any such preference, all persons with good sight would agree on this point, as they do on the relative beauty of isochronous and non-isochronous colours or sounds, or of harmonizing and discordant ones.

Another argument against the visual beauty of forms, is the undoubted fact that the same form which is eminently beautiful in a particular situation, or applied to a particular purpose, may be eminently the reverse when its situation or destination is changed. It is generally acknowledged that architecture has never produced a form of more unimprovable beauty, *in its place*, than the oldest form of Doric column; but erect a magnified model of this, as a monument, (like that at Plymouth,) and no one admires, many laugh at it: the reason will be explained presently. But surely if the form were in itself pleasing to the eye, like an harmonious arrangement of colours, it would be pleasing whenever it was seen, and to whatever purpose applied. Even a change of *scale* will render a beautiful form ridiculous, or the reverse, while its destination remains unchanged. Thus, columns and balusters have, to all appearance, the same kind of destination, to support a horizontal beam; yet when the most perfect forms of columns,

such as have been admired for ages, in all kinds of situations, are reduced to models and used as balusters, (a common practice in England during the Greek mania,) no one discovers their beauty; and on the other hand, when the baluster form is applied to columns, (as in some Indian buildings,) the sense of beauty is offended: even the most corrupt designers of the Boromini school never descended to such a monstrosity. If forms please the *eye*, why is it considered a defect for a steeple to resemble, or be fancied to resemble, a pepper-box? The form which is pleasing in one object would be pleasing in the other.

We have already mentioned two other arguments against the existence of ocular preferences of one form to another: one drawn from the fact that the presence of the most beautiful or most ugly forms, or their images in the eye, is a matter of total indifference as long as they are not *looked at*, that is, as long as the mind is not directed to them; the other, from the analogy presented by all the other senses, which are never pained unnecessarily, but always for a preservative reason,—for a warning to withdraw from something hurtful to them or their organs. Now, no one pretends that ugly forms are hurtful to the *sight;* though I doubt not they are so to the *mind*, and that, whether perceiving their ugliness or not, it suffers thereby.

Though these reasons, however, might induce us to deny altogether the influence of form on mere *ocular* beauty, they are by no means sufficient to lead to the rejection of form as a source of abstract beauty,—that is, to lead us to deny, as Milizia appears to do, that one form can be more beautiful than another, in itself, as a *form*, apart from all fitness to a particular purpose, and all definite expression or character. We do not pretend to deny this, but only to deny that it is an ocular beauty, and to maintain that (except perhaps the preference shown to curves before straight lines) all preferences of this kind are purely mental.

In considering this abstract beauty of forms, or their beauty

as forms, apart from the objects to which they belong, we are continually in danger of mixing up the effect produced on us by the other qualities of those objects; which qualities become so associated in our minds with the object, (and consequently with its form,) that we can hardly separate them from it. Perhaps the best way to acquire a habit of doing so is, to confine our attention at first to such forms as are perfectly *unmeaning*, belonging to no natural or useful object, and having no traceable resemblance thereto. In the figures formed by the kaleidoscope, or in ornaments not copied from natural objects, nor having any constructive meaning, (which may be detected by their requiring a particular position with respect to the horizon,) all preference given to one form or pattern over another, must depend on its abstract beauty as a form: thus the Greek fret or meander, and especially Moorish paneling or paving, (arising from the Mohammedan perversion of the second commandment, forbidding all imitation of natural objects,) are well adapted for this purpose; but Gothic tracery is, in general, less fitted for it, because it is either imitative, as our flowing leaf-like tracery, or else has a constructive meaning, shown by its not bearing to be placed on its side, or inverted. Perhaps the latest French form of tracery, called the Flamboyant, has the least meaning of any, and therefore best illustrates abstract beauty of form. In any case, it is to the minor ornaments of architecture that we must look for its illustration, and not to general forms, principal members, or any constructive features, because fitness to their destination, definite expression, and other higher excellences, will always, in them, interfere with, and should prevail over, mere formal beauty.

In analysing such examples of ornamental forms we shall find the chief properties common to them in all styles, to be those which we have mentioned above, viz.

1. *Equal-spaced repetition*, exemplified in all descriptions of diaper patterns.

2. *Uniformity of halves;* which sometimes has place not only in one direction, or on each side of *one* axis, or plane of

division, but is related to *two* such planes at right angles to each other, or to *three* intersecting each other in a single axis, and dividing the object into six equal sectors, or to *four, five,* or any number of such planes, subject to the same condition; all which practices are evidently founded on nature, in which a *single* plane of uniform division is characteristic of all the higher classes of animals, and of numerous classes of flowers and fruits (the leguminosæ, papilionaceæ, &c.): two such planes, or a *double* uniformity, though a rather uncommon arrangement, is not without example in many vegetable objects; a division by *three* planes, or into six sectors, pervades the flowers of monocotyledonous plants; a *fourfold* uniformity, or eightfold division, runs through those of the cruciferæ, &c.; and a *fivefold* belongs to the great majority of dicotyledonous flowers, and to the lowest or radiate class of animals.

3. *Preference of curves to straight lines.*—Every eye prefers the patterns composed of curves to those composed of straight lines, abstractedly, without reference to their situation, &c.; and though every complete style of architecture presents ornament or tracery of both descriptions, it is easily seen that the rectilinear is introduced always from other considerations, abstract beauty, considerations of fitness, construction, consistency of character, &c.,—or else to give value to the more pleasing forms.

To these principles we may add,

4. *Preference of curves of contrary flexure* to those which have no such contrariety; the flowing tracery of the fourteenth century, for instance, to the (so called) geometrical tracery of the thirteenth, which is equally composed of curves, but without points of contrary flexure. Every one has heard of Hogarth's 'line of beauty.'

5. *Preference of curves of varying curvature* to circular ones. The main difference between Greek mouldings and Roman ones, between Greek vases and Chinese, is that the former are composed with outlines of continually varying curvature, and the latter with circular arcs.

6. *Unity or consistency of character.*—Mixtilinear form or ornament is, in general, less beautiful than either that which is composed entirely of straight lines or entirely of curves. This will be especially the case when several straight lines fall together in one place, and several curves in another, because then the mixture of incongruous principles is most obvious. The defect is best counteracted when the straight and curved lines are equally distributed throughout, and especially when a general principle is seen to govern their use, that is, when all the straight parts have something in common *besides straightness*, and all the curved parts some common quality *besides* their curvature. The same remarks apply to the mixture of circular with variable curves, and, in general, to every attempt at mixing different *styles* of form. It can succeed only when some new law, that did not apply to either of the styles separately, is introduced and made to govern their respective use, and thus restore that consistency which has been violated by the mixture; and this law must be so extensively applied and strictly observed, as to be quite obvious to the spectator at a glance. Thus those ingenious decorators, the Arabs, wishing to combine the beauties and richness of two kinds of ornament, often did so without inconsistency by placing them on the same surface, but giving them different degrees of relief, or different colours, so that one appears superposed in front of the other, without interfering with it. The eye can follow each separately, as the ear follows the bass or treble of a complex piece of music.

It is hardly possible to state collectively these proximate principles of beauty in form, without being led a step higher, to a generalization, which reduces them all to a broader principle, though still only a proximate one. This has commonly been stated as the *combination of* UNITY *with* VARIETY. It is best explained, perhaps, in the words of Dr. Hutcheson, who states as an axiom, (with regard to mere formal beauty,) that where the uniformity is equal, the beauty of forms is in

proportion to their variety; and when their variety is equal, their beauty is in proportion to their uniformity.

Unity or uniformity is here taken in its widest sense, as meaning oneness of *any thing*, of size, of form, of number, of ratio, of succession, of any quality, or any principle whatever; it is, in fact, synonymous with method, order, law, or consistency. It is so far opposed to variety, that they cannot exist together in regard to any one quality. Yet the beauty, of which we are now speaking, consists not as some most erroneously suppose, in keeping a 'happy medium' between these two opposite principles. Such a rule, being merely negative, can lead to no positive beauty. This consists not in the avoidance of both the opposite qualities, but in just the reverse of this, in combining both in their greatest possible perfection,—in reconciling the extremes of both. Of course, this can only be done by the maintenance in all the parts of the composition, of perfect unity in regard to some one quality or circumstance, with the utmost variety in some other quality or circumstance. This is necessary to the display of any beauty, however slight; but its degree will be increased in proportion to the number of points of correspondence or unity, and of points of variety. Hence the designer examines and analyses the various qualities or circumstances of the parts of his design, in order to find as many points as possible in which they may be made to resemble each other, or to differ. Moreover, the number of points of resemblance, and of points of difference, must be about equal. If the former preponderate in number, we say the design is *monotonous*, or wanting in variety. If, on the other hand, the points of variety are greatly more numerous than those of unity, we call it *confused*, or wanting in character (*i. e.* self-consistency). These faults do not imply an absolute excess of unity in one case, or variety in the other, but only an excess relatively to the other quality—in fact, a deficiency of that other quality. And it would be well if these faults were always so understood, and remedied not by

removing a point of resemblance in the one case, or of difference in the other, but by *adding* the contrary,—by hunting out some new point of difference or resemblance, instead of abandoning an old one.

Neither unity nor variety can ever be carried too far, if, for every instance of the one, an instance of the other be also found. It is an error to say that, in any composition, one of these qualities is in excess: it can never be in absolute excess; it is the other quality which is in relative deficiency.

Let us now illustrate this principle by its application to the simplest cases of abstract beauty in nature and in art, leaving the reader to apply it to more complex examples.

It is extremely doubtful whether absolute unity, without any point of variety, can constitute beauty in any object. We have an instance of such a kind in a straight line of equal thickness and intensity throughout its length. There seem to be cases where this is admired, as in the sea-horizon, in a stratiform cloud, &c.; but we shall presently show that they would not be considered beautiful by themselves, and only become so by a relation with their accompaniments.

The case is very different when the line regularly diminishes in strength from one end to the other, as in the perspective image of a railway bar, a distant glimpse of a lake, or the sea-horizon in many cases. Here the unity of direction, in all parts of the line, is accompanied by a variation in strength, and, again, by an unity in the law of this variation.

Even without this latter kind of unity, a straight line, varying in thickness *irregularly*, as the angle of an old but firm building, is allowed to possess a beauty which it had not when new. How different is the edge of a warped brick, or an ill-founded building, which wants the unity of straightness.

An irregularly curved line is destitute of beauty because the variety (of direction) is obtained only at the expense of unity: not so with a circular arc; though the unity of *direction* is abandoned, there is a substitute for it in the unity of *curvature*. It is the simplest of lines that can be beautiful

in itself without the aid of varying thickness; for, while its parts all vary in one respect—direction, they all agree in the rate of this variation, *i. e.* in curvature. The beauty is doubled, however, by a regular variation in thickness; for there are now *two* points of variety, viz. in direction and in thickness, and also *two* points of unity, a constant rate of curvature, and a constant law of diminution.

But the circular curve is the least beautiful of all regular curves; for, in all others, an additional kind of variety is introduced, in the variation of curvature; and an additional kind of unity, in the constancy of the law of this variation. Without the latter circumstance, no increase of beauty, but the very reverse, would accrue from the mere variety; for it would be obtained at the expense of the unity of curvature. Thus the varied curvature in the haunches of the Tudor arch is generally considered a defect. When similar lawless variations occur more than once, they produce what is called a *crippled* curve, the ugliest of all lines.

The circle, then, is excelled in beauty by all other simple curves; but, fortunately, *perspective* remedies its defect, by rendering its ocular image almost always elliptical or hyperbolic.* It is a very rare case for the eye to be exactly in the axis where the circle can be *seen* as a circle, and in such a case we never hear its beauty admired.

All other curves besides the circle resemble each other as regards the exhibition of unity and variety; and, accordingly, we never hear of any preference given to one more than another, on account of abstract beauty. Hay has shown that the most perfect forms of Greek pottery and ornament may be imitated by combinations of elliptic arcs. So they might,

* Circles give a parabolic or hyperbolic perspective image when we view the interior of a domed building from a point perpendicularly under the circumference of one of its horizontal circles. The visible portion of *this* circle will then be projected as a parabola, and all *larger* horizontal circles as hyperbolas; only those which are *smaller* than this, being seen in the usual manner as ellipses.

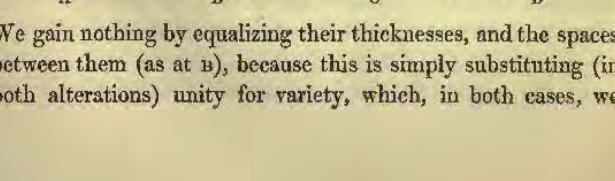
doubtless, by arcs of any curve of varying curvature. The *parabola* is admired in cascades and fountains; the *catenary*, in drapery and festoons; the *trochoid* and *epitrochoid*, in penmanship; the logarithmic *spiral*, in shells and volutes; and various kinds of *elastic* curves, in vegetation.

It may be doubted whether the repetition of similar objects at equal distances has any beauty except when seen perspectively. It is hardly ever possible (indeed impossible if they be in a straight line) so to view them as to have their images formed on the retina, similar and equidistant. Against unity of form and of direction, then, we have to set off variety of apparent size and apparent distance apart; this variety being still, in each case, subject to an uniform law of increase or decrease. There are thus more points of unity than of variety; and, accordingly, a series of this kind requires but little extension to render it monotonous.

If the series be arranged in a regular curve, this deficiency of variety is supplied without diminishing the points of unity, the unity of direction being replaced by that of curvature, &c., and thus the beauty is greatly augmented.

We may illustrate these principles by a figure (A) composed of concentric circles placed at random, and varying irregularly in every thing except their unity of form and concentricity. This can hardly be said to possess any positive beauty, though it would be beautiful by comparison with a figure in which they were either crippled or not concentric.

Fig. 1.



A B C D

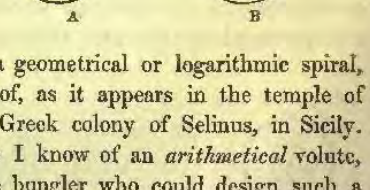
We gain nothing by equalizing their thicknesses, and the spaces between them (as at B), because this is simply substituting (in both alterations) unity for variety, which, in both cases, we

abandon. But in C, the two principles are reconciled, the variety in the intervals being accompanied by the unity of a law regulating them all: thus a certain degree of beauty is produced, which is augmented by the introduction of another source of variety in the unequal thicknesses, and of unity in the regulation of these also, by an uniform law. The example D is added to show that it matters not how the variations occur, provided there be as many points of resemblance as of difference.

A series of quantities or dimensions, forming a progression of any sort, is thus always beautiful, however complex may be the law of the series. But the arithmetical progression is less beautiful than any other, for the same reason that the circular curve is less beautiful than any other. In *this*, the direction is indeed continually varying, but always at the same rate; and in *that*, the successive terms of the series increase or diminish always by the same increment or decrement. Both are improved, therefore, by exchanging this sameness (of the curvature in one case, and the increment in the other) for variety, provided this be regulated by one uniform law.

Hence the arithmetical spiral is the least beautiful curve of its kind, as any one will probably admit who compares these two examples, A being the ordinary form of the Greek Ionic volute, viz. a geometrical or logarithmic spiral, and B an imitation thereof, as it appears in the temple of a 'mixed order,' at the Greek colony of Selinus, in Sicily. This is the only instance I know of an *arithmetical* volute, a form well worthy of the bungler who could design such a piece of inconsistency as Ionic columns supporting a Doric entablature.* Nature affords instances of the geometric spiral in every univalve shell,—of the arithmetical spiral in none.

Fig. 2.



* A writer on design makes the following singular mistake on this point: "In geometry there are many varieties of the spiral curve, with

A kind of iron fence has lately been introduced, in which the horizontal bars are placed at progressively increasing distances from the ground upwards. It shows how much beauty may be added to an object without adding any thing else, except (in this case) stability and mechanical fitness.

Serial progressions, however, have little place in architecture, at least in the dimensions of principal parts, because equality always answers the same purpose, the equal divisions being reduced by perspective to a progressional series. We have an instance of an actual series of this kind, however, in the stories of St. Bride's steeple, which form four terms of a geometrical progression; and any one may easily convince himself that the smallest perceptible alteration in the height of any one of them would destroy the beauty of the whole;—a very different effect from any that is observed in deviations from the 'harmonic proportions,' on which some insist and place such reliance.

All the modes of combining unity with variety hitherto noticed may be included under the term GRADATION. There is, however, another mode of effecting this object, on a totally different principle. Where there are only two objects or parts of one object considered, they may be made to correspond in certain respects, and vary greatly, or even as much as possible, in other respects; and this mode of reconciling unity with variety is termed CONTRAST. It is evidently opposed to *gradation*, since the two extremes are here brought together

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rules for their formation. But the most beautiful, and that which is most useful in ornamental design, is what is called the spiral of Archimedes. It is so called from his demonstration of its nature, by which it is proved that if the arc of a circle be divided into any number of equal parts, and radii drawn from the centre to these points, the spiral line commencing at the end of one of those radii, where it proceeds from the centre point of the circle, and ending at its other extremity, will divide all the intermediate radii in arithmetical progression," &c.—HAY, 'On Ornamental Design.' On the contrary, this kind of spiral is to most tastes the *least* beautiful, and certainly the least usual in ornamental art.

without any intermediate softening or preparation. Consequently there can be no compromise between the two modes of treatment. Whichever the designer adopts in any particular case, that principle and that alone must be carried out. In a curved line there is gradation (of direction),—in the meeting of two lines at an angle, there is contrast. So also in a curved surface there will be gradation of light and shade,—in the meeting of two planes, contrast of the same qualities. In either case the rounding off the angle would be an attempt to compromise between these opposite principles of beauty, and would lead to a sacrifice of both, without any equivalent; so that we need not wonder at this practice never having found favour in any style or in any age, however depraved in taste. To this also we may attribute the absence of the *hyperbola* from the extensive list of ornamental curves. It seems the only simple or well-known curve that is banished from decorative design, probably from its too near approach to the character of an angle rounded off, affording neither the beauty of contrast nor of gradation.

Contrast then consists in a perfect similitude between two adjacent objects in certain respects, accompanied by a wide difference in some other respect, or sometimes in two or three other respects, (in which cases we may term it double or triple contrast,) but the single is more common. Resemblances are quite as necessary as differences, and indeed must be more numerous. There can be no such thing as contrast between two things that are altogether different. In most contrasts, they differ only in one point, and are alike in every other.

The uniformity of halves derives its beauty from a single contrast of the most perfect kind. In the case of a plane figure, the two parts are alike in every respect except position. They are repetitions of the same identical form, but so placed that we see the front of the one and the back of the other. In a solid body they are contrasted also in their mode of receiving the light, yet perfectly similar in form.

How much the beauty of such forms depends on the first-

mentioned contrast will appear by regarding those few cases of uniformity of halves, in which this contrast (of front and back) is omitted, as in the letters s and z, in which, however, the halves have still a contrast of position. But I know of no natural form composed on this principle.

In cases of uniformity related to several planes of division, *i.e.* in starlike forms, the number of repetitions, or sectors, of similar form, is always *even*, and they are alternately reversed, front for back, in every natural example. Art, however, in times of depraved taste, introduced as a novelty forms of this kind in which contrast is neglected, all the sectors presenting the same side to the spectator. This gives always the idea of rotation, whence the expression, a *turning* star or flower. This kind of form, of course, is proper for a wheel, but highly improper for any part of a fixed structure. Its non-occurrence in nature is sufficient to prove its inferiority also as regards abstract beauty.

Whenever Nature has repeated sectors of similar form, in this manner, without alternate opposition, she has supplied its place by introducing another element of variation, viz. in *size*. In this way the whole class of univalve shells are composed, by a number of sectors round an axis, all alike in form, but whose sizes form a geometrical progression.

The beauty of curves of contrary flexure (Hogarth's principle) generally arises also from contrast. Hence it is a mistake to suppose that the passage from convexity to concavity should be *gradual*, that is to say, that the curvature should continually diminish up to the point of flexure, become evanescent at that point, and then increase, as in the long italic *f*. This is what necessarily occurs in all curves that have naturally a contrary flexure; but though these are appropriate to many purposes, and have a beauty of their own, this is quite distinct from that of the flexures which arise from the combination of *two* curves, and is much less frequently applicable. The former beauty is one of gradation; the latter, one of contrast: for as the change from one law of curvature to

the other must take place at some definite point, it must be *sudden*, and partake of the nature of contrast.

In examining instances of this kind of flexure, it will be observed that the mere identity of *direction* in the two curves, at the point of contact, is not always sufficient to prevent their appearing disjointed,—that is, deficient in unity. Hence some additional kind of unity should be sought to connect them, and this we may find in equality of *curvature*; besides which, the most perfect contrast requires similitude in all points except those which are contrasted: whence the contrast of two opposite and *positive* * qualities (as convexity and concavity) will be most perfect when they are both equally removed from the mean (which in this case is straightness); whence we may infer that the deflexions of the two curves from their common tangent should be initially equal,—that is, their *curvatures* equal at the point of junction. Accordingly, in examining forms of this kind, it will be found that when faulty, their fault arises from the radii of the two curves at their junction being too unequal; and in the Grecian forms composed of elliptic arcs, by Mr. Hay, it will be found that the most graceful bends are those in which the two ellipses touch at points having the greatest equality of curvature.

As the change from one law of curvature to another must always have the nature of contrast, there appears no reason why we should seek to diminish this contrast without the possibility of gaining the opposite beauty,—that of gradation or continuity; for this can exist only where the law is continuous, or, in other words, where the whole is *one* curve. There appears, therefore, no foundation for the rule maintained by an eminent architect, that wherever two curves unite (not by an angle) it should be by a contact of the second order. To explain this, we must observe that lines may meet in an infinity of different ways. When they coincide at a point, and have at that point different *directions*, the meeting is not

* This does not, of course, apply to qualities of which one is only the *negation* of the other; as light and shadow, or curvature and straightness.

called a contact, but a finite angle. When they have at their meeting the same *direction*, but different *curvatures*, it is called a contact of the FIRST order. Of this kind is the contact of one circle with another, and of a circle (or any conic section) with a straight *tangent;* for the curvature of this is 0. Contacts of this kind between two curves must be either *external*, (where their curvatures are in contrary directions, that is, one convex towards the same side that the other is concave, or one + and the other −,) or *internal*, when both are curved the same way.

But a contact of the SECOND order requires that the two lines shall, at their meeting-point, coincide not only in *direction*, but in *curvature*. Hence there can be no contact of this kind between two circles, (for if their curvatures were equal and turned the same way, they would coincide altogether,) nor between any conic section and its tangent, because there is no point, in any conic section, that is destitute of curvature. But a curve that naturally has contrary flexure may form this kind of contact with a straight line drawn through its point of flexure (for at that point the curvature is 0, being at its transition from + to −). Such contact may also be formed between two conic sections, as, for instance, between any point of an ellipse (not upon one of its axes) and its *osculatory* circle, or the circle which both touches and has equal curvature with that point of the ellipse. Contacts of the second order are neither external nor internal, but always *mixed;* the curve which is the outer one before contact, becoming the inner one afterwards.

But if the circle osculate the ellipse at the end of one of its axes, the contact is entirely exterior to the ellipse if made on its *side*, and entirely interior if made on its *end*, and in either case it is that kind of contact which we have called *internal*, one curve being within the other. This is a case of contact of the THIRD order, which consists in the two curves coinciding not only in *direction* and in *curvature*, but also in the *rate of variation* of that curvature. This rate is in the present case 0 ;

for the curvature of the circle is unvarying, and that of the ellipse is, at these points, at its maximum or minimum, and therefore neither increasing nor decreasing, but in the act of passing from one state into the other.

So also when the curvatures are not only equal and varying at the same rate, but this rate of variation is also fixed in both, or varying at the same rate in both, the contact will be of the FOURTH order; and it is obvious that these orders may be extended *ad infinitum*. We may add, that all contacts of an *even* order must be *mixed*, and all those of an *odd* order must be *internal* or *external*. Hence, in so uniting two curves as to form a 'line of beauty,' or contrary flexure, the contact can never be of the second or any *even* order.

The abandonment in architecture, therefore, of contacts of the first order, would lead to no little complexity in the curves. Even in the simplest case,—that of the junction of a curve with a straight line, (as at the springing of an arch from its pier,)—we should have to banish not only the circle, but every conic section, and use some more complex curve, such as should have a point of infinite radius (*i. e.* of contrary flexure, if continued) at the springing. These are not only *unnecessary*, but, I will venture to say, *false* refinements. By attempting to conceal the change from one line to another, as if it were a fault, they tend to make it appear one. Now, if it be a fault, it can never be obviated in this way; for if the contact were even of the hundredth order, it would still be an abrupt change from one law of curvature to another, or to straightness. That which *must* be abrupt, is better made as perfect a contrast as possible, and not as imperfect as possible. The error has arisen from inattention to the fact that there are two kinds of contrary flexures, the one owing its beauty to GRADATION, the other to CONTRAST; that the first can only exist where there is an unbroken continuity of law,—that is, where the curve on both sides of the flexure is *one* curve; and that, whenever there are *two*, as there must be some contrast, it should be made as complete a contrast as possible, by making the contact always

of the *first* order, always *external*, and the contrary curvatures, at their junction, equal.

If these views of curvilinear form be right, it will follow that all internal contacts, and all osculations (or contacts of any order above the first), are to be excluded from ornamental design. This would condemn the Tudor arch; for in that form the change of curvature is always made by an internal contact of two circles; and though it was a capital invention for its purpose, as we shall see in a future chapter, and the best that could be expected of a school of masons who appear to have been acquainted with no curve besides the circle; yet its obstinate retention at the present day, (to the exclusion of the far more fit and perfectly graceful curve of the parabola), only shows architecture, whether as an art or a science, to be at least three centuries behind the rest of the world.

The object of this chapter has been to consider the nature and laws of those kinds of beauty in architecture which belong to colours and to forms abstractedly; or regarded apart from the things to which they may be applied, and consequently without reference to their destinations; or to the beauties of expression, definite character, or fitness. The beauties here treated of are those to which Mr. Fergusson gives the term æsthetic, or sensuous, but it has been here attempted to be shown that this term applies, in strictness, only to the beauties of colour, and that those of form are always addressed to the mind, though they constitute the lowest class of excellences so addressed; and in as far as they make no attempt at definite expression, or the excitement of a definite emotion, do not, according to the views explained in our former chapter, entitle the art in which they are found to the appellation of a Fine Art.

CHAPTER III.

DIFFERENT KINDS OF BEAUTY, OF SUBLIMITY, AND OF PICTURESQUENESS—THEIR CHARACTERISTICS.

"Without carrying our art out of its natural and true character, the more we purify it from every thing that is gross in sense, in that proportion we advance its use and dignity; and in proportion as we lower it to mere sensuality, we pervert its nature, and degrade it from the rank of a liberal art; and this is what every artist ought well to remember."— Sir Joshua Reynolds, *Discourse* ix.

It is the business of good taste to estimate each kind of beauty or excellence in its true relative value, so as never to sacrifice a higher beauty to a lower, or one more nearly approaching to the merely sensual, but always the reverse.

Of the relative places that should be assigned, in our estimation, to the different classes of beauties or merits in visible objects, we may perhaps form a tolerably correct opinion by observing the order in which they begin to be appreciated earliest by children. Those which are the soonest appreciated must needs belong to the lowest class, speaking to the faculties least removed above the merely animal ones. Now, the first visible beauties which a child learns to admire and seek, are indisputably those of bright or isochronous colour, then those of harmony in colours, and then those of abstract form, without reference to character or fitness, which is not seen till long afterwards. He appreciates the beauty of a vase or a baluster much sooner than that of a column, and admires the Corinthian order long before he finds any beauty in the Doric; because the first-named objects have the largest amount of formal beauty, while the last have most expression of character and fitness to a definite purpose.

As the merely sensuous, then, must always give place to

the intellectual, where they are incompatible; so must all the beauties mentioned in our last chapter, not merely those of colour, but those of unmeaning form, gradated and contrasted curvature, give way, when necessary, to those of definite character and fitness.

The first and most obvious distinction of character in beauty of every kind, is into what may be called the bold or powerful, and the gentle or delicate styles of beauty. The bull and the stag, the oak and the palm, the rocky mountains and the swelling hills, the heroic and the pastoral poem, the Hercules and the Apollo, the painting of M. Angelo and that of Titian,—these are a few examples from the different departments of nature and art, that will illustrate the distinction here alluded to.

It is hardly possible not to observe that these two opposite kinds of beauty in visible objects are connected with two opposite qualities of outline, or rather two principles in the composition of forms. With regard to the former or more partial view of the subject, Alison says, "Simple forms then may be considered as described either by angular or winding lines. These different forms seem to me to be connected in our minds with very different associations, or to be expressive to us of very different qualities. I shall beg leave to mention some of these, without pretending to a complete enumeration.

"1. The greater part of those bodies in nature, which possess hardness, strength, or durability, are distinguished by angular forms. The greater part of those bodies, on the contrary, which possess weakness, fragility, or delicacy, are distinguished by winding or curvilinear forms. In the mineral kingdom, all rocks, stones, and metals, the hardest and most durable bodies we know, assume universally angular forms. In the vegetable kingdom, all strong and durable plants are, in general, distinguished by similar forms." [He might have said *always*, in their principal or structural parts.] "The feebler and more delicate race of vegetables, on the contrary, are mostly distinguished by winding forms. In the animal kingdom, in the same manner, strong and powerful animals are generally

distinguished by angular forms; feeble and delicate animals, by forms of the contrary kind." To this might be added the example of the human figure, in which, as every beginner in drawing knows, the masculine outlines are those which always present the nearest approach to angularity,—the feminine, most roundness and contrary flexures.

The same author continues—"2. In all those bodies which have a progress, or which grow and decay within our observation, the same character of form is observable. In the vegetable kingdom, the infancy or youth of plants is, in general, distinguished by winding forms. The infancy and youth of animals is, in the same manner, distinguished by winding or serpentine forms; their nature and perfect age, by forms more direct and angular. In consequence of this connexion, forms of the first kind become, in such cases, expressive to us of infancy and tenderness and delicacy; and those of the second kind, of maturity and strength and vigour.

"3. Besides these very obvious associations, it is also to be observed, that from the sense of touch, angular forms are expressive to us of roughness, sharpness, harshness; winding forms, on the contrary, of softness, smoothness, delicacy, and fineness; and this connexion is so permanent, that we immediately infer the existence of these qualities when the bodies are only perceived by the eye. There is a very strong analogy between such qualities, as perceived by the sense of touch, and certain qualities of mind, as, in all languages, such qualities are expressed by terms drawn from the perceptions of the external sense. Such forms, therefore, when presented to the eye, not only lead us to infer those material qualities which are perceived by the sense of touch, but, along with these, to infer also those qualities of mind which from analogy are signified by such qualities of matter, and to feel from them some degree of that emotion which these dispositions of mind themselves are fitted to produce. In all languages figurative expressions of a similar kind will be found; and whoever attends either to his own feelings, or to the meaning which men in general

annex to such words in applying them to forms, will, I believe, be convinced, that the emotion which they signify, and are intended to signify, is founded upon the associated qualities, and very different from the mere agreeable or disagreeable sensation which the material qualities alone convey.

"4. The observations which I have now made relate principally to simple curves, or to forms in which a single curvature takes place, as the curve of the weeping willow, of the young shoots of trees, of the stem of the tulip, and the lily of the valley. There is another species of form, commonly distinguished by the name of the winding or serpentine form, in which different curves take place, or in which a continued line winds into several curvatures. With this form I apprehend we have another and a very important association, I mean that of ease. From what cause this association arises, I will not now stop to inquire; but I conceive every one must have observed, that wherever we find vegetables or any other delicate or attenuated body assume such a form, we are impressed with the conviction of its being easy, agreeable to their nature, and free from force or constraint. On the contrary, when such bodies, in the line of their progress, assume angular forms, we have a strong impression of the operation of force, of something that either prevents them from their natural direction, or that constrains them to assume an unnatural one. That winding forms are thus expressive to us of volition and ease, and angular forms of the operation of force or constraint, appears from a singular circumstance in language, viz. that, in general, all the former directions are expressed by verbs in the active voice,—a river winds, a vine wreathes itself about the elm, a flower bends, &c.; while on the other hand, all directions of the latter kind are expressed in general by the passive voice of verbs." [The oak *is* gnarled, the river *is* suddenly deflected, the stem *is* contorted, &c.] "I believe also I may appeal to the observation of the reader, whether from the winding of a river, of the ivy, or of the tendrils of the vine, he has not an impression of ease, of freedom, of

something agreeable to the object; and whether in the contrary forms, in such cases, he has not an impression of uneasiness from the conviction of force having been applied, or some obstacle having occurred to constrain them to assume a direction unnatural to them. In general, therefore, I apprehend that winding or serpentine forms are expressive to us of ease, and angular forms, of force or constraint. Such seem to me the principal associations we have with the great divisions of simple forms; winding forms being expressive to us of fineness, delicacy, ease; and angular forms, of strength, roughness, and, in some cases, of the operation of force or constraint."*

I have quoted this at length, as containing, I believe, a proximate principle of great importance to be constantly borne in mind by every one who aims at distinct expression in the arts of form, and especially architecture, because this art does not consist, like the others, in the imitation of natural forms, but only of natural principles. It will be presently shown how this rule regarding curvature and angularity can be reduced to a particular case of a higher generalization; but meanwhile I must observe, that when the same author, in order to support his theory, (of the non-existence of abstract expression in forms, apart from association with natural objects,) attempts to pick flaws in the very principle he has above so well explained, and to find exceptions to this his own rule, he seems to fail completely, in consequence of the general error common to these inquiries, of mistaking one kind of beauty for another, forgetting that this word means merit or excellence of *any* kind. Thus he observes, "When this association is destroyed, or when winding or curvilinear forms cease to be expressive of tenderness or delicacy, I believe it will be found that they cease also to be felt as beautiful." But the examples which he adds to prove this, are not cases in which these forms cease to *be expressive of* those qualities; but cases in which

* Alison's 'Essay on the Sublimity and Beauty of the Material World,' chap. iv. sect. i. part 2.

they cease to *accompany* the said qualities, being applied to objects of an opposite character: and the loss of beauty resulting, is a clear proof that these forms have *not* ceased to possess their peculiar expression; for if they had, they would be as applicable to these objects as to the former, and would produce as much beauty in them; but this is admitted to be not the case, that is, the same forms are less beautiful in these objects than in the former,—in other words, less *fit* for them: for, when the same form is pleasing in one object, and displeasing in another, the difference can only arise from fitness to one and unfitness to the other; consequently, if curved and reflexed forms cease to be beautiful when applied to objects of strength and durability, it proves them to be inappropriate to such objects. The loss of beauty arises from the loss of propriety and consistency between the character of the object and the character of its form. Let us examine the instances given by this author.

"There are many parts, however, of the vegetable kingdom, which are not distinguished by this character of delicacy. The stem of some species of flowers, and of almost all shrubs,—the trunk and branches of trees, are distinguished by opposite characters, and would indeed be unfit for the purposes of vegetation if they were not. In these subjects, accordingly, the winding or serpentine form is very far from being beautiful, as it has no longer its usual expression of fineness or delicacy." To this we may object, that,—*first*, it is precisely *because* it retains its usual expression of delicacy that it ceases to be beautiful, because it ceases to be *fit;* its expression is false, and contradicted by the character of the object; and, *secondly*, notwithstanding this unfitness, such is the abstract beauty of the form, that it sometimes overpowers this defect, as in the cases of the cocoa-nut and the bamboo, which no one will admit to be "far from beautiful." On the contrary, I believe, there are few who will prefer their straight-stemmed congeners—the cabbage-palm and the common cane.

"In the smaller and feebler tribes of flowers," adds he, "for

instance, in the violet, the daisy, or the lily of the valley,—the bending of the stem constitutes a very beautiful form, because we immediately perceive that it is the consequence of the weakness and delicacy of the flower. In the rose, on the contrary, and the white lily, (and in the tribe of flowering shrubs, a class of vegetables of greater strength,) the same form assumed by the stem is felt as a defect, and, instead of impressing us with the idea of delicacy, leads us to believe the operation of some force to twist it into this direction." This is only because experience has taught us that, in these plants, the forms in question are exceptional, and therefore defects. A man who saw them for the first time would not see any defect, nor do we see any in those cognate species (as the turkscap lily, &c.) which assume such bends naturally.

"In the growth of the stronger vegetables, as of trees, where we know and expect great strength, nothing can be so far from being beautiful as any winding or serpentine form assumed by the trunk. The beautiful form of such objects is of so very different a kind, that it is in the opposite form only that we perceive it. In the direction of the branches the same character is expected, and a similar defect would be felt in their assuming any regularly winding or curvilinear form.* It is only when we arrive at the young shoots—and that only in their infant season, in spring—that we discover again the serpentine form to be beautiful; because it is then only that we perceive it to be really expressive of tenderness or delicacy,"—rather, because it is then applied to objects whose character agrees with this expression; its want of beauty (*i. e.* of fitness) in the former cases, having arisen from its having been still really expressive of this same character—a character opposite to that of the objects, in those cases, so that the beauty of the form in itself, as a form, was lost in the ugliness of inconsistency between the objects and their forms.

"All the different bodies which constitute the mineral

* This evidently refers only to dicotyledonous trees.

kingdom are distinguished by a greater degree of hardness and solidity than is to be found in any other of the productions of nature. Such bodies, however, by different exertions of art, may be moulded into any form we please; but the beauty of the serpentine form, in such cases, is lost, from our consciousness of the absence of that delicacy which in general accompanies such forms." If so, architecture has indeed been wrongly conducted in all ages alike; for the Ionic and Corinthian capitals, the leaf-cut mouldings, the friezes of scroll-work, in the antique; and the 'high-embowered' vaultings, the foliaged bosses, crockets and finials, the foliated and flowing traceries, the ogive hoods, in the mediæval system,—have ever been valued as among its happiest inventions.

"It is possible, for instance," he proceeds, "to imitate the winding of the ivy, the tendrils of the vine, or the beautiful curves of the rose-tree, in iron or in any other metal. It is possible, also, to colour such imitations in so perfect a manner as at first to deceive the spectator. If I am not mistaken, however, the moment we are undeceived,—the moment we know that the subject is so different from that which characterizes such forms in real nature, the beauty of the forms is destroyed, and instead of that pleasing sentiment of tenderness which the delicacy of the vegetables excites, a sentiment of disappointment and uneasiness succeeds;—of disappointment, from the absence of that delicacy which we generally infer from the appearance of such forms; and of uneasiness, from the conviction of force having been applied to twist the subject into so unnatural directions." Here the whole fault arises from the vulgar error of attempting *deception*. This is not the place to attack that art-destroying fallacy; but it will be shown presently, that *whenever* an art condescends to deceive, it forfeits all right to a place among the Fine Arts. It may be simply observed of this example, that if the spectator had not been deceived, he could never have been undeceived, and consequently never have experienced the contingent evils described.

"If the same observation is further pursued," he says, "I think it will be found, in general, that wherever the delicate forms of the vegetable world are imitated in metal, or any other hard and durable substance, the character of the form is lost, and that, instead of that lively emotion of beauty, which we receive from the original forms, we are conscious of a feeling of discontent, from the seeming impropriety of giving to such durable substances a character which does not belong to them."

Such is the deduction to which his theory leads. Its correspondence or not, with general experience, must decide us whether to regard it, not as a true or a false, but as a complete or an incomplete theory.

On the other hand, with regard to the opposite class of forms, he remarks, "that angular forms are also beautiful when they are expressive of fineness, of tenderness, of delicacy, or such affecting qualities;" but it might be objected to this, that they are *never* expressive of such qualities, and that they cease to be beautiful (*i. e.* cease to be fit) precisely when they are applied to objects possessing these qualities.

Thus he observes: "In the vegetable world, although it is generally true that winding forms are those that are assumed by young, or feeble, or delicate plants, yet this rule is far from being uniform; and there are many instances of similar productions being distinguished by forms of an angular kind. There are accordingly many cases where this form is considered as beautiful, because it is then expressive of the same qualities which are generally expressed by forms of the other kind." These are rather cases where the angular kind of form is *less* beautiful than usual, because accompanying qualities of which it is *not* expressive, they being always expressed (though not always accompanied) by forms of the other kind.

The first example given is this: "The myrtle, for instance, is generally reckoned a beautiful form, yet the growth of its stem is perpendicular, the junction of its branches

forms regular and similar angles, and their direction is in straight and angular lines. The known delicacy, however, and tenderness of the vegetable, at least in this climate, prevails over the general expression of the form, and gives it the same beauty which we generally find in forms of a contrary kind." In natural objects, the character of the thing necessarily (when we are accustomed to it) prevails over that of the form, if different. But this very expression 'prevails over' shows the two characters to be contradictory, and consequently the form wanting in consistency. Accordingly, we shall find that this form has *not* been generally reckoned beautiful, for we know of no single instance of this or any similar case (of wholly angular vegetation) being imitated for ornamental purposes. Our author indeed observes, "there are an infinite number of the feebler vegetables, and many of the common grasses, the forms of which are altogether distinguished by angles and straight lines, and where there is not a single curvature through the whole, yet all of which are beautiful; and of which also some are imitated in different ornamental forms with excellent effect, merely from the fineness and delicacy of their texture, which is so very striking that they never fail, when we attend to them, to afford us that sentiment of interest and tenderness which in general we receive from the opposite form." But I have never met with any imitations of these vegetable forms, and cannot believe that they could ever be applied as ornament 'with excellent effect.' He observes also, "that the leaves of vegetables form a very common and a very beautiful decoration, though they are less distinguished by winding lines than almost any other part of the plants." But it would be difficult to say what parts of plants contain in general more curvatures or contrary flexures than the leaves. Even these, however, do not often exhibit these forms naturally, to a sufficient extent to render their literal copies in stone fit for the purposes of the architect: he has nearly always to represent them more flexible and more curled and reflexed than they ever are in

nature. The truth and *naturalness* of such deviations from particular nature will be explained in our next chapter; but we must here observe that this author's mistake seems to be confounding the beauty of *things* with that of their *forms*. All natural objects are beautiful, but their beauties reside in different qualities, not always in form. Hence it is not true that all natural forms are beautiful. We may hardly be able to detect this in Nature herself; but when the forms are separated from the things, and exhibited alone (by sculpture or carving), we then see that they are not all fitted for ornamental purposes, and indeed that very few, perhaps none, are so fitted without correction. Yes, I say *correction*, for though it is the highest aim of every art to imitate Nature, this is not to be done by imitating any natural form, but by *criticising* and *correcting* it,—criticising it by Nature's rules gathered from all her works, but never completely carried out by her in any one work;—correcting it by rendering it more natural, *i. e.* more conformable to the general tendency of Nature, according to that noble maxim recorded of Raffaelle, "that the artist's object was to make things not as Nature makes them, but as she WOULD * make them;"—as she ever tries to make them, but never succeeds, though her aim may be deduced from a comparison of her efforts: just as if a number of archers had aimed unsuccessfully at a mark upon a wall, and this mark were then removed, we could by the examination of their arrow-marks point out the most probable position of the spot aimed at, with a certainty of being nearer to it than any of their shots.

The application of this doctrine to the practice of the painter and sculptor is well known. General nature, with them, signifies the end at which nature aims in all the individuals of a given *species*. Idealization consists in the representation of that species more perfectly than any individual represents it. Now

* Soleva dire Raffaello che il pittore ha obligo di fare le cose non come le fa la natura, ma come ella le dovrebbe fare.—ZUCCHARO, *Lettere*.

Would or *intends* appears the most exact translation of *dovrebbe*.

I apprehend that a similar principle must be pursued by the architect, and even the architectural carver or decorator, but on a wider scale. What natural objects or *individuals* are to the painter or sculptor, natural *species* or even *genera* must be to the architect and designer of ornament. The general nature which they are to embody is not that of a single species, but of some higher natural division,—a genus,—a family,—an order,—a class,—a whole kingdom,—nay, in some cases, even universal nature, animal, vegetable, and mineral; or at least all those objects in universal nature which possess some particular character or quality which it is the object of the architect to express with the utmost force.

This is not the place to develope the principle; but to return to the fact above observed,—that Nature's general mode of expressing strength and the more exciting qualities was by angularity; and her general mode of expressing delicacy and the soothing qualities, by curvature; we may conclude that there must be a reason for this,—that these qualities of form must, in themselves, have a connexion with these characters and emotions of mind, independently of all association with natural objects; so that we should perceive the difference even if we had never seen natural objects. This I conceive to be the case, for the following reason: Angles are instances of the most abrupt CONTRAST between the directions of their component lines, while curves owe their beauty to GRADATION. Of these two qualities, contrast is certainly that calculated to *excite;* and gradation, that calculated to *soothe.*

If this view of the case be correct, it will follow, that all other kinds of contrast, to whatever sense addressed, will partake of the same general character of severe beauty, as angularity in form; and that gradation or modulation, wherever found, will express the gentler qualities, as well as curvature. Now let us see how this holds good in the other departments of nature and art, apart from form.

And first, of light and shade; it is plain that those solids

which possess straight and angular outlines will generally possess plane surfaces, meeting in edges or nooks. Here, then, the two planes that meet at any edge or nook will rarely receive equal degrees of illumination,—often will one be in broad sunshine, and the other in its own shadow. In no case, however, whether the difference of luminosity be great or little, will there be any softening or gradation from one into the other, but always an abrupt *contrast*. Bodies of curved outline, on the other hand, will generally possess curved surface, every point of which, being differently inclined to the incident rays, receives a degree of light intermediate between that of the points on either side of it, so that the whole surface glows with continued gradations passing from the brightest point through all intermediate tints into complete shade, but without any line of division, or any contrast. Thus the same qualities of figure which most conduce to angularity of outline, conduce also to contrasts of light and shade on the surface; and those which accompany curvature of outline lead to gradated shadowing.

The simple cone, and the cylinder with flat ends, are two of the most unpleasing forms in building, (as may be seen by most of the hideous additions with which we crowd the tops of our finest buildings, because Architecture has not, since the time of the Greeks, found time to discover how to build chimneys.) This want of character in the two forms in question, I attribute to the incongruity existing between an angular outline and a modulated light and shade. The convex roofs on angular plans, common in France during the seventeenth century, are generally disliked, probably from the opposite kind of inconsistency—curvature of outline with contrasted light and shade.

Rocky scenery commonly owes its severe and grand character less to angularity of outline than to the sharply contrasted light and shade arising from the prevalence of plane surfaces and cuboidal nooks and edges. How opposite in character is the beauty of curved undulating hills, which, even when mag-

nified to the scale of the Pyrenees, are rather beautiful than grand; and this also is due more to the shadowing than to the outline, since it is conspicuous even when the sky-line is straight, angular, or absent from the view, but can hardly be rendered in an outline drawing only.

Next, with regard to colour; the great philosopher of painting says—"Grandeur of effect is produced by two different ways, which seem entirely opposed to each other. One is, by reducing the colours to little more than chiaro-scuro, which was often the practice of the Bolognian schools; and the other, by making the colours very distinct and forcible, such as we see in those of Rome and Florence; but still the presiding principle of both those manners is simplicity. Certainly nothing can be more simple than monotony; and the distinct blue, red, and yellow colours, which are seen in the draperies of the Roman and Florentine schools, though they have not that kind of harmony which is produced by a variety of broken and transparent colours, have that effect of grandeur which was intended. Perhaps these distinct colours strike the mind more forcibly, from there not being any great union between them; as martial music, which is intended to rouse the nobler passions, has its effect from the sudden and strongly marked transitions from one note to another, which that style of music requires; whilst in that which is required to move the softer passions, the notes imperceptibly melt into one another." *

It may be observed that the term *broken* seems applied by painters chiefly to colours that are made, at their junction, to melt gradually one into the other, or to glow with a rainbow-like gradation of tints, the effect of supposed reflexions of coloured light from neighbouring objects, as in the ornamental style of painting of the Venetians, of whom the same admirable critic observes, "Though in this respect the Venetians must be allowed extraordinary skill, yet even that skill, as they have employed it, will but ill correspond with the great

* Reynolds, Discourse iv.

style. Their colouring is not only too brilliant, but, I will venture to say, too harmonious to produce that solidity, steadiness, and simplicity of effect, which heroic subjects require."

The beautiful analogy, above pointed out by this master, between the forcible and gentle styles of colouring, and those of music, will convince the reader that in this latter art also, though addressed to us through a different sense, the opposite principles of contrast and gradation retain the same distinctive qualities. I doubt not that numerous passages will occur to the reader to prove that in poetry also the grander styles abound in contrasted ideas, antitheses, and truths set forth in apparent verbal contradictions; while in the softer and more fascinating compositions, such contrasts are avoided, and the transition from one image to another is made gradually and with preparation.

We may conclude on the whole that the distinction of character between angular and curvilinear forms is only a particular case of the general distinction between things that combine order and variety by the principle of *contrast*, and those which combine them by the principle of *gradation*. It must be observed that the general neglect of this source of different expressions in abstract *form*, must be attributed to the fact that architecture is the only art to which it applies. Neither the sculptor nor the painter has to study the differences of character belonging to differences of form, in general, but only in the particular species or class of objects which he is representing. He has to discover not what varieties of *form* most conduce to a particular expression; but what varieties of *human form* are most associated therewith, because most frequently accompanied by the quality or emotion he would depict. His discriminations of form must doubtless be incomparably nicer than the architect requires, simply because they are all comprised within such incomparably narrower limits. Instead of being free to range through universal nature, not only through all existing but all possible forms, his

choice is confined to the limits to which Nature has confined herself in a single species; so that, compared to the architect, he resembles a musician composing for an instrument whose range is exceedingly small; or to a draughtsman who is prohibited the use of white or black, and confined to a limited scale of tints: of course he must compensate for this limitation of range by a more nice discrimination. But, besides this, the varieties of expression in animated forms depend on other principles than those applying to forms in general. As the chemist and physicist find the laws they have deduced from dead matter, all applicable, indeed, to living organisms, but so modified by the superaddition of new and special laws as to be sometimes hardly recognized; so we should err in applying the laws of expression, in abstract form, to imitations of living forms, whose expressions arise from associations more special, more narrow and concrete, but, at the same time, more powerful, and generally quite overpowering those which might arise from the general laws applicable to all forms alike; whence it happens, that the study of these general laws is, if not useless, at least unnecessary, to the professors of special design (painters and sculptors), and has thence fallen into neglect with the professors of abstract design (architects and decorators); but we shall endeavour hereafter to show, that only by attention to these laws have the styles which we blindly admire, miscopy, and misapply, been originated and perfected.

If it be granted, then, which I think admits of no doubt, that in all unmeaning things, (*i. e.* all those which do not affect us by association,) and in all the sensible qualities of such things, as form, shading, colour, and sound, the two principles of *contrast* and *gradation* are expressive of opposite qualities—the first being grand, forcible, and exciting; the other, elegant, gentle, and soothing—it will follow, that in applying this rule to the most varied and precisely definable of the above-named properties, (that of form,) we may discriminate between the two extreme styles of form, or those

which carry out the said principles to their fullest possible extent, several intermediate steps, several varieties of form, which, by approaching nearer and nearer to the simply severe, or to the merely elegant, without going to those extremes, will be fitted for various purposes, to which the extreme modes of treatment would be improper.

First, then, to decide what is the absolute extreme in the application of the principle of contrast. All curves, being instances of the contrary principle—gradation, are evidently excluded; the forms, therefore, must be composed of straight lines and angles. All angles are contrasts, but all are not equally so. The contrast between the directions of the two lines is evidently smallest in the smallest and largest angles. On the other hand, the greatest difference that can exist between two directions is perpendicularity. Right angles, then, present a stronger contrast than any other angles. Thus, plane figures will most powerfully carry out this principle when they are entirely rectilinear and rectangular. But in proceeding from plane figures to the more complicated case of solid bodies, we have to consider not only the apparent outline, as seen from various points of view, but also the light and shade, which often conduces more to the general character at first sight, especially in large objects, than the outline itself. Curved surfaces, of course, are to be avoided; but what should be the prevailing angle of the edges or nooks where two planes meet? At first view it might appear that the greatest contrasts of light and shade would be insured by the most *acute* arrises; the greatest possible difference of illumination being that which occurs between a plane exposed perpendicularly to the sun's rays, and the *back* of the same plane, or a parallel one. But then it must be remembered that it is impossible to see both these planes at once, and that the smaller the angle between two planes, the smaller the chance of an eye being so situated as to see them both. On the other hand, the larger the angle, the smaller the chance of the sun being so situated as to shine perpendicularly on one, without

illuminating the other; and when the angle is larger than 90 degrees this will be impossible. An obtuse edge or nook, then, can never exhibit the maximum of contrast between complete light and complete shade, though every right-angled and acute one *may* do so, and the more acute, the more frequently will this happen, but the less frequently will it be *seen*. On the whole, then, it may be concluded (and, indeed, might easily be mathematically proved) that the greatest chance of powerful contrasts *occurring and being seen*, will be in the case of a rectangular arris.*

* We have founded this reasoning on the supposition of *sun-light*, or that coming in one direction only, as being the simplest case; but in the climate of England, sunshine being an exception, not a rule, all things should be designed rather to suit *cloud-light*, or that which comes from every point of the upper hemisphere, almost equally, and in many cases quite equally. There are all possible intermediate degrees between sunshine and this perfect equality, which may be called *fog-light;* but it would be needless to consider the exact effect of any but the two extreme cases. Their difference may be distinctly shown by supposing a globular body exposed to each. In the sunshine it will have one half of its surface shaded *equally* throughout, being entirely deprived of direct light, and seen only by light reflected from surrounding objects; the other half will have its light varied in such a way that the brightness of each point will be proportional to its direct distance from the plane that cuts off the shaded hemisphere; *i. e.* proportional to a line dropped perpendicularly to that plane. But in *fog-light* the same globe will exhibit a continued gradation from its brightest point (the highest) to its darkest point (at the bottom), the law of which gradation will be, that if we suppose a horizontal plane passing through any point, the brightness of that point will be proportional to the solid content of the portion of the globe comprised below that plane. Thus the law connecting the brightness of different surfaces, with their inclination to the brightest surface, will be very different in these different modes of illumination. In *cloud-light* the actual contrast of light and shade on each side of any edge or nook will also be greater, the *smaller* the angle, and *vice versâ;* but as the chance of seeing both surfaces at once is always greater, the *greater* the angle, and *vice versâ*, we may conclude that the angle most conducive to the display of contrast is, in this case, (as well as in *sun-light*,) the mean between the largest and the smallest,—namely, a *right* angle.

The solid figures, then, that most completely carry out the principle of contrast, will have plane surfaces, and rectangular edges, or nooks. This is the case with most rocks, (especially the older limestones, the grandest, perhaps, of them all,) in a remarkably uniform manner. The requirements of organic bodies generally render planes and edges inapplicable; but yet, in their outlines, we shall perceive the grander and more powerful objects, in both the vegetable and animal kingdoms, to be characterized, not only (as Alison remarked) by angles, but chiefly by *right* angles. Such are the junctions, and even chief bends, of the trunk and branches in the giants of the forest,—the oak, and the still mightier cotton tree. How different is the effect of generally oblique junctions; as in the elm, many pines, and most smaller trees and shrubs. In the most powerful animals, and even the most sturdy varieties of generally weaker species, the straight lines and right angles of the outline must have struck every one. In the rhinoceros, the ox, and the bull-dog, this is very obvious. There is also less curvature (or, at least, less convexity) of surface in such organisms, than in the feebler and gentler species; for it may be remarked, that though all curved surface introduces gradation of light and shade, concavity does so to a much less extent than convexity, for the whole or great part of a concavity *may* often be thrown into equable shadow, (as we often see in the flutes of a Doric column,) while a convexity must always present soft gradation. Concavity also necessarily leads to the increase of edges, and their consequent contrasts, but convexity to their diminution. So prejudicial is smooth convexity to the kind of expression now under consideration, that nature seems to avoid or disguise it by all sorts of expedients; as rugged bark, shaggy coats, marked muscles, and the folds of the rhinoceros' hide.

Rectilinear but *oblique-angled* form may be regarded as a style one step removed from the severity and grandeur of the exclusively right-angled. It is exemplified in slate rocks, (less grand than those of limestone, notwithstanding their greater

scale and primitive character,) also in the structural parts of nearly all plants not remarkable for sturdiness and durability. It may further be remarked, that the character of grandeur is always diminished, and that of elegance increased, by the introduction of *gradated systems* of lines. In the rectangular style such things can hardly exist. The only kind of gradation we can have, is that of a progressional series of dimensions (as that in St. Bride's steeple); but when once oblique angles are admitted, there can be sets of lines exhibiting a gradated series, not only of dimensions, but of *directions* also. This is the case whenever they form a series of equal or regularly gradated angles, as in radiating from a centre, forming any star-like or flower-like figure, or any series of equal or regularly graduated bends, at equal or regularly graduated distances, as in a portion of a polygon, either regular, or such as might be inscribed in any curve. In fact, such arrangements will always suggest the idea of a curve, and we are affected by the expression, not only of what *exists* in any form, but also of whatever is *suggested* to the eye by it. Thus in even the most exclusively rectangular design, a step-like succession of a few zig-zags, either equal or regularly gradated, will immediately suggest the appearance of an oblique line or surface, and will therefore lose a portion of the rectangular character; and in that proportion fall off a little from grandeur towards elegance. So also in oblique-angled design, any admission of the principle of gradation, as by fan-like, polygonal, or curve-like arrangements, will so far depart from the severe character, as to bring us close upon the verge of curvilinear design. It may be observed that whenever small, short-lived, or delicate plants are composed of straight lines, they are made to abound in these regularly gradated arrangements, either radiating or curve-suggesting. The equisetum is an instance where both are fully carried out. In the ferns also the straightness and angularity of detail (otherwise so contradictory to the graceful curvature of the general forms) is modified by the copious introduction of the principle of grada-

tion, not indeed in *directions*, but in *dimensions*, with a degree of regularity and uniformity perhaps unparalleled.

From such examples as the equisetum, the transition to *curvilinear* design is hardly perceived. Here it is observable that those curve compositions will contain most of the principle of contrast and least of gradation, which contain most angles and fewest contrary flexures; for though the latter must perhaps be regarded (at least when composed of two curves) as extremely delicate, or infinitesimal cases of contrast, yet associations drawn from natural objects have so taught us to connect them with every thing soft, fragile, and weak, that they are, and always must be, the variety of form most removed from the severe and exciting, and most completely embodying the elegant and soothing qualities. Accordingly it appears that the varieties of Gothic tracery in which this kind of form is introduced, (as the English foliated and French flamboyant,) are always regarded as something more light, delicate, and fanciful, than the preceding varieties, which do not contain less curvature, but whose curves are united only by angles and cusps, instead of by contrary flexures.

A further distinction must still be made between *artificial* contrary flexures, or those composed of two curves, and *natural* ones, or those in which the same curve (with the same equation) continues throughout. We considered this distinction in our last chapter, and may now observe that the former class (the artificial or *contrasted*) were the only 'lines of beauty' known to or employed by the Gothic artists, (except of course in imitative sculpture,) and that the latter (the natural or *gradated*) were the only ones used by the Greeks, or by nature, as far as we have the means of tracing. To this class belong all the natural forms of the animal world; as all those of the mineral belong, on the other hand, to the rectilinear and angular class.

Forms may be divided, then, as regards their inherent or essential expression, (apart from association,) into at least five

classes, according to their degrees of contrast or gradation; from the most grand, severe, and forcible, to the most elegant, fanciful, and delicate. Thus we may arrange:

I. Rectilinear and rectangular forms.
II. Rectilinear but oblique-angled forms.
III. Curvilinear forms without contrary flexures.
IV. Curvilinear forms with artificial contrary flexures.
V. Curvilinear forms with natural contrary flexures.

In most complicated productions, whether of nature or of art, we of course find several, or even *all* these classes of form united. Let us inquire, then, to what different parts of such a composition the different classes of form are naturally and essentially best adapted.

Alison has the following correct remarks on this subject: "The great constituent parts of every building require direct and angular lines, because in such parts we require the expression of stability and strength. * * * A balustrade might with equal propriety be finished in waving lines, but certainly would not be beautiful. A twisted column, though affording very pleasing curves to the eye, is acknowledged to be less beautiful than the common and regular one. * * * It deserves to be remarked, that the form of the great constituent parts of all vegetables, whether strong or delicate, is nearly the same; the growth of the stem and the direction of the branches being in both alike, and in both also either in straight or in angular lines. It is principally in the more delicate parts of the first, in the young shoots, and in the foliage, that they deviate from this form and assume winding or curvilinear directions." *

* 'Essay on the Sublimity and Beauty of the Material World,' chap. iv. sect. i. part 2. He proceeds, however, by immediately falling again into the error, as I believe, of confounding *beauty* with *delicacy*, and the *expression* of the latter with its *reality*. "It is in these parts only [the shoots and foliage], as I have before observed, that we discover beautiful forms. In the class of feeble or delicate plants, on the contrary, the forms which we neglect in the first [robust trees] are regarded as beau-

It may be taken, then, as a principle hardly admitting of question, that, as in nature, so in art, the graver and more forcible varieties of form should in every case prevail most in the ruling and structural parts of a work, and that the more elegant varieties should find their place chiefly in the ornamental details. In all the most approved works, of whatever style, this will be found an inviolable rule. Whether a portion only, or all of the five classes of form be employed, the class nearest the beginning of the above list will be found in the ruling forms and divisions; and that placed latest in our list will be confined to the smallest and most ornamental parts; the intermediate class or classes being found in features of an intermediate degree of importance.

It is impossible, however, to cite cases of the operation of

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tiful, because they have that expression which is found only in the opposite forms of the other. The same form has thus a different effect from the difference of its expression, and the straight lines and angular junctions, which are merely indifferent in the elm and the oak, are beheld with delight in the plant and the flower, when we are convinced that they are accompanied with tenderness and delicacy." But most persons would rather regard them as fit and beautiful in the elm and oak, and behold them not with delight, but rather with *surprise* and *curiosity* in the plant and flower. According to this author, all vegetable beauty would seem to consist in delicacy, not the expression but the quality of delicacy; so that wherever this quality is wanting, beauty is impossible, whatever may be the form; and that wherever delicacy exists, the form, no matter what it may be, angular or curved, is always beautiful, and always expressive of delicacy: for to say that a form *expresses* any quality, or that it *accompanies* that quality, are with him the same thing.

But it seems more probable that beauty consists neither in delicacy nor in its expression, but in the correct expression of *whatever* quality the object really possesses,—in a perfect correspondence between its expression and its real qualities; and I consider that this correspondence, though much more general in nature than in art, is not universal, even in the former,—that when trees grow into gradual curves, or flower-stalks into abrupt angles, these are defects,—and that though it is true that the qualities which any form expresses, are those which *generally* accompany it, nature sometimes deviates from this rule, and associates certain forms with qualities the reverse of what they express.

this principle by itself, because it is always, or always ought to be, modified by the introduction of another, which is perhaps equally (or almost equally) important, viz. that the same gradation of qualities observed between the *principal* and the *subordinate* features should also (as in trees) be maintained between the *supporting* and the *supported* parts; so that the classes of form standing nearest the beginning of our list should prevail more in the lower parts of a building than (in features of the same degree of magnitude and importance) higher up; and the class employed only for the merest ornaments near the ground, may be applied to more important features in the upper parts, and even to principal members, at the top of all. Thus the allotment of the kinds of form proper to principal, subordinate, and ornamental parts, will not be the same in all the stories of a building, but must be modified according to the height above the ground.

Thus, in deciding to which of the five classes of form a given feature should belong, we may consider this to be dependent on three elements jointly; 1st, the graver or higher character of the destination of the building; 2ndly, the greater or less importance of the feature itself; and 3rdly, its height above the ground. And by regarding each of these elements apart from the others, we may deduce these three rules:

I. That in buildings of different destinations, features which are of the same importance, and placed at the same heights relatively to the whole buildings to which they belong, should never be found belonging to a graver class of form in the building of the lighter destination, and *vice versâ*.

II. That in the same building, and at the same height above the ground, principal and structural members should never belong to a lighter class of form than subordinate features, nor these to a lighter class than ornaments.

III. That in the same building, features of the same degree of importance, but situated at different levels, should never belong to a graver class of form at the higher level than at the lower.

These rules will, I believe, be found to apply more or less extensively both to styles and to individual buildings, in proportion as the said styles or buildings are more or less generally admired by persons of good taste. Let us examine a few instances.

In the Egyptian buildings we find forms of the first, third, and fifth classes, but hardly any of the second or fourth. The inclined outer surfaces of the walls hardly lead to angles sufficiently oblique to be removed from the first class. In the general arrangement, both of plan and elevation, rectangularity is found to be more universally carried out than in any other style; circular forms are confined to features of *secondary* importance, as columns, or to the *highest* principal member—the cornice. Even the columns are frequently replaced by quadrangular piers, or else present a very ingenious contrivance for combining the convenience of a rounded shape with the grave effect of rectangular edges, by making them resemble a cluster of square prisms placed with an angle of each turned outwards, so that the plan of the column presents eight or twelve salient right angles, or edges, alternating with as many rentrant obtuse angles, or nooks. Curves of varying curvature are confined to the imitative sculpture or hieroglyphic details, and to the capitals of columns, (the highest part of a secondary feature,) while even in these we find no contrary flexures in the earlier and purer forms of capital—the lily-shaped and bud-shaped,—but only in the bell-shaped ones, which seem to have been a late introduction, and confined to columns of small dimensions. The Egyptians attempted more than any other nation to harmonize their sculpture with their architecture, and make it seem a part thereof: and this they effected by the avoidance of curves of contrary flexure, and by bringing their outlines to approach as much as possible to straight lines and right angles; so that, of their colossal statues, it may be almost a matter of doubt whether we should regard them as works of sculpture or of architecture.

In the next well-known style, that of the Doric temples, we find a no less grave and severe effect maintained, or indeed rather increased, by the still greater predominance of the graver species of forms, while far greater consistency and truth regulates the use and relative situation of the different species, *all* of which are here brought together. Rectangularity is strictly observed in the plan and principal arrangements, up to the highest part of the structure. Only in the roof and pediments do we find the second class of form appearing in principal members. Lower down, oblique angles appear only in minor details, as the grooves and chamferings of the triglyphs. The deviations from rectangularity in the soffit of the cornice and diminution of the columns, will be shown in a future chapter to be actually intended more completely to carry out this very principle, as is obviously the case with those smaller deviations in the architecture, frieze, &c., which, being imperceptible to the eye, are of course only optical refinements. As for the third class of forms, they are, as far as regards the entablature, so scantily introduced and in such minor details as evidently to be intended chiefly to give value to the general squareness that prevails, as a few spots of cold colours in a warm picture seem to increase its general warmth. The columns, however, with their curved surfaces, might at first seem a notable exception to this; but it must be remembered, that, convenience having dictated their general form to be *round*, a great difficulty hence arose, which was admirably overcome by a refinement on the Egyptian method of clustered squares above mentioned. The column, though rounded, was made to present twenty *rectangular* edges, and though the recess between each, instead of being angular, as in the Egyptian contrivance, was rounded into a curved sweep, this was not done without an important reason, to be noticed presently, and did not lead to much gradation of light and shade, for we have seen that concave surfaces are far less liable to do so than convex ones. It may be remarked that *no* Grecian Doric shaft was intended to preserve its ori-

ginal convex surface, the two or three examples that remain in that state being evidently, from various marks on other parts, left unfinished. The greatest piece of convexity in this style is the echinus of the capital, and that is almost flat. What I have called the fourth species of form occurs nowhere but in the bird's-beak moulding, the smallest and least essential detail in the whole order; and the fifth species occurs (if at all) as an architectural feature, only in the fleurons (or what are falsely called honeysuckle ornaments) on the antefixa tiles of the roof; or sometimes, though rarely, on the highest member of the pediment cornice. The sculptures of course belong to this class of form; but they are *sculpture*, not *sculptural architecture*, as in the Egyptian buildings;—they owe their expression, as we have said all animate forms do, to laws different from, and superadded to, those of abstract form, and which virtually exempt them therefrom; so that the imitation being supposed, as in this case, perfect, the figures may harmonize with the severe rectangular architecture perfectly in *expression*, though not at all in *form*, for their expression as animate *figures* totally prevails over and blots out their expression as *forms*.

In proceeding to the second Greek order, we find that in adopting it from their Ionian neighbours, the Greeks *omitted the dentils* (an important part of the original Asiatic order) because they justly thought rectangular forms inappropriate to such minor features, so near the top of a composition aiming altogether at greater delicacy and elegance than their national style. In the shafts of the columns all the edges are rectangular as before, but the capitals present forms of the third class, verging towards the fifth in the contrary flexure of the festoon connecting the volutes. It was, therefore, inconsistent that features of no greater importance, and situated higher, should be rectilinear and rectangular. They were, accordingly, omitted, and their place supplied by the rounded forms of the egg and dart moulding. Mouldings of contrary flexion, also, are introduced where, in the Doric order, they

would have been simply curved; as, particularly in the crowning cyma, here always reflexed, and presenting the only large member of that form. Even the fleuron ornaments belonging to this order can be immediately distinguished from those appropriate to the Doric, by the greater prevalence, in the Doric, of angles real or suggested; and, in the Ionic, of contrary flexures.

In the Corinthian order we first meet with the soft gradation of light and shade on a round convex shaft, intentionally left so. Here we first find forms of the fifth kind reigning exclusively throughout all the ornamental details, — here we first meet with reflexed curvature in the general outline of members of such importance as the capital and the modillions, (most decidedly in the latter, as being placed higher,)—and here we first meet with forms of the second and third class, (or oblique-angled and circular,) in the general *plans*, as in the Tower of the Winds, and Monument of Lysicrates. The latter presents a remarkably fine instance of that arrangement of the different classes of form *according to height*, on which we insisted above. In the basement every thing is rectangular, except a few of the smallest details, and these only near the top. In the principal story the general forms are circular, (of the third class,) and the details (of the same class in the bases) verge into reflexed forms in the capitals. Above the cornice, every thing, from general outline down to detail, is of the fifth class, presenting the highest possible refinement of fantastic lightness and elegance, while in the basement the extreme of the opposite characters is found.

We must not expect to find such true attention to principles in the works of the ancient Romans,—works which, as criticism advances, may be observed to be slowly but surely falling in estimation, and finding their true level as the works of a people, who, as Fergusson observes, "put things together without end, but never so as to make one harmonious whole out of two things;" and asserts, probably with much truth, that "in no Roman author is there one

single passage that shows a knowledge of what Art really is, or what are its true uses. Had there been such, we perhaps should not so long have remained in ignorance of them."* The introduction of the arch and dome constructions necessarily led to more frequent circularity in the principal parts of buildings both in plan and elevation, and this called for a far greater preponderance of curved forms in the minor features and details, than their servile adaptation of Grecian forms (instead of Grecian principles) would admit. Nevertheless we find them, or their Greek designers, showing the good taste to employ almost exclusively the Corinthian order and the fifth class of forms in all ornamental carving, while the general outlines of mouldings (being a step higher in importance) are of the third and fourth class,—chiefly the fourth. They had also the good taste to make the right-angled arrangements of chief members (the columns or pilasters and entablatures) prevail in apparent importance over the arch. We do not here enter into the question whether it was right abstractedly, thus to make what was really the principal feature apparently subordinate; that belongs to a higher division of the subject, and will be noticed in our next chapter. But what I would here remark is, that, supposing it decided that the Greek rectangular arrangement of principal features was to be retained, along with the new curvilinear arrangement, it was right that the latter should be made subordinate to the former, which belonged to a graver class of form; and I know of no other way than this to account for the very remarkable choice which the Roman architects made, in placing their newly invented arches *within, and in subordination to,* the borrowed rectangular framing of pillars and entablatures; when their respective capacities, as regards construction, would (besides pride in their national invention) rather have led to the contrary practice—the filling up of a wide arch with subordinate Grecian arrangements.

* Fergusson's 'Historical Inquiry into the Principles of Beauty in Art,' pp. 478, 482.

It would be useless to seek for fixed principles in the chaos of architectural manners (for they cannot be called styles) that intervened between the fall of the Roman and the rise of the Gothic systems, and filled up the long night of barbarism between the setting of the ancient civilization, and the appearance of the first dawning beams that heralded the approach of the modern. When those beams at length began to pierce the intense darkness of the twelfth century, Architecture was the first art to feel their genial influence; its lofty erections were the first objects to reflect the dawning rays. That preponderance of curvature in details, which we have said the introduction of curvature in main structural features ought to have brought in its train, now, for the first time, appeared. All rectangular details were gradually omitted, and the mouldings (while prodigiously increased in amount) were brought entirely into the fourth class of forms, while the arches were, by the introduction of an angle, generally approaching a right angle, brought as near the severer kinds of form as their curvilinear nature would permit. On the other hand, to diminish the gap between them and the principal forms of the building in elevation and in plan, these latter were, to a great extent, removed from the first into the second class of forms,—in plan, by the copious introduction of polygonal forms, (which, in the French and German Gothic churches, often make up the whole eastern half of the plan,)—and in elevation, by the predominance in the upper part of the building of highly inclined roofs, gables, and spires. By such means, there was at length established a consistency nowise inferior to that observed in the finest Grecian works, though confined to a narrower scale; the forms of the fifth class being found only in the smallest ornamental carving, and never spreading to features as large and important as a volute or a modillion, while those of the first class are almost completely banished from every thing except the grand divisions and masses of the building, and are never found in any details, not even those of the basement. In

complete Gothic buildings, then, the forms are chiefly of the second, third, and fourth classes; and the reader will find that in the examples of uniform date and most admired for their purity, the *second* (oblique-angled) class prevails at the top of the whole work in principal members, as roofs, spires, and lanterns; lower down, in secondary features, as angle-set pinnacles, buttresses, gablets, and hoods; while, near the ground, it is confined to mere details, as plinths, off-sets, and water-tablets. The *third* class (curvilinear, but not reflexed) is nowhere, in good Gothic, allowed to enter into the *plans* of primary or even secondary features; its most important place is in the arches and vaultings, and these necessarily prevail most towards the upper parts of the work. Moreover, even here these forms are modified, and assimilated as much as possible to a graver class, by the abundance of angles generally approaching right angles. Very different was the treatment of window tracery, a comparatively subordinate feature; here there are few angles, properly so called, for the junctions are made to embody or suggest, as much as possible, the idea, not of finite angles but of cusps or angles of contact. Moreover, about the middle of the fourteenth century, when the Gothic system had arrived at (or perhaps rather past) its culmination, a greater change arose from the fact, that the *fourth* class of forms, which had gradually superseded and replaced the third in all moulding profiles, now advanced into this feature (window tracery*), and from thence gradually invaded more important features, as hoods, small arches, pinnacles, and, at length, even gables, till the Gothic school, overgrown and crushed by this and other abuses to be mentioned further on, died a natural death at the good old age of 300, after the most remarkable, and,

* In England such window tracery is not common, because it was, soon after its introduction, superseded by the *perpendicular* fashion, which is quite peculiar to this country, and cannot be considered an integral part of the general Gothic system, which in all other countries continued to decline in the way here described by the increase of wavy or reflexed curvature.

in some respects, glorious career ever run by any school in any art. But it will be observed that even in the latest efforts of this style, its designers could in many cases, by well-cultivated taste, still preserve that gradation in the places assigned to the different classes of forms, on which we are now insisting. Notwithstanding the inordinate increase of the fourth class, this consistency was often preserved by not allowing principal features to assume that kind of form, except in the uppermost parts of the building; and by lowering the class of other forms proportionally, as, for instance, the plans of minor turrets, pinnacles, plinths, and capitals, from the second class into the third, (by hollowing their faces,) and the ground-plans, from the first class into the second, (by the multiplication of oblique angles,) as we see very remarkably carried out in Henry the Seventh's chapel.

Contemporaneously with the decline and fall of this wonderful system in our northern counties, (where it lingered longest,) another hardly less admirable arose in Italy, which now, for the first time, saw the accomplishment of that which the ancient Romans, with all their power and prodigious extent of building, could not effect, viz.—the successful adaptation of Grecian forms and principles to a more extensive and varied architecture, and one in which the arched mode of construction should be admitted. From this style we could draw innumerable illustrations of the importance of the principle now under consideration: we could show that nearly all the corruptions which gradually crept into it, and which every tyro is now taught to condemn, without being able to give any other reason than "because they are corrupt," really owe their faultiness entirely to the breach of this principle: thus, in window pediments, the circular form is allowed, but not with contrary flexure;—why not? because it would then belong to a lighter class of form (the fourth) than many far less important members accompanying it. The simple circular form, however, though admissible on this small scale, is wrong when applied to a larger pediment, (as in one

of the fronts of Greenwich hospital,) because this is a more important feature than many on the same level which are rectilinear. Curvilinear roofs are condemned, but the crowning dome is admitted to be a chief glory of the style; simply because it is placed above all the roofs, and has (or should have) no rectilinear features above it. A dome applied lower down as a lean-to, is better disguised into a form of the second or even first class, (as Wren has done over the transept entrance of St. Paul's,) than left to appear a dome (as at St. Mary-le-Strand). Scroll forms (of the fourth or fifth class) are proper in a modillion or bracket, or other minor feature, but not when applied as a buttress, (a common practice in the façades of churches in France and Italy,) because there are graver classes of form applied to members, both less important, and situated at a higher level. It is very different with the scrolls that support the ball at the summit of St. Paul's, or that occur near the tops of some of the finest campaniles of Wren and the Italian masters; they have no graver form above them. Wren, however, committed a few great sins against this principle, of which we may mention the two chief, viz. the lantern of St. Paul's, and another of very similar plan, forming part of the steeple of St. Mary-le-Bow: in both of these an exclusively rectangular plan is placed above circular ones. We find no such inconsistency in his masterpiece, St. Stephen's, Walbrook; there, every arrangement is right-angled, up to the entablature, above which come the oblique-angled plans, and still higher, every thing is circular.

We leave the reader to apply these principles further, convinced that there is no generally admired building in any style in which he will not find them prevailing; and that nearly all the practices condemned (though generally without alleging a reason) in the works of Boromini and his followers, will be found to be exposed by these simple rules. That artist built a church at Rome which presents the only example, probably in the civilized world, of a plan with contrary flexure, and has generally been condemned, either because it was like no other,

or because it resembled the front of an old-fashioned chest of drawers. These are no reasons at all to a man of common sense: we might as well condemn a straight front, because it is like others, and like the side of a table;—but we trust the reader will now see why this innovation was wrong.

As the lighter classes of form are indisputably the most beautiful in themselves, apart from fitness, there is generally, when the art is in a progressive state, far more danger of their encroaching on the domains of the graver classes, than there is of the contrary evil. Accordingly, it was in this way that the Greek, the Gothic, and the Italian systems all declined and fell after their perfection had been reached, and change began to be sought no longer for the sake of improvement, but for the sake of change. To these we might add the Moorish system, which seems to have culminated in the Alhambra, and afterwards to have sunk under this same abuse, the fourth class of forms gradually superseding the third, even in so important a member as the arch. The great defect of this style, however, was always want of attention to this correct placing of the different classes of forms; and at present, in the poor remains of it practised in Mohammedan countries, the forms are jumbled together with as little regard to fitness, as in our own sham architecture. If we may judge from engravings, the arches are almost exclusively of the reflexed (or ogee) form, while mere details on them are often of a more severe class (the second), and the minutest lattice-work often of the first. The confusion, however, cannot be worse than that to which our own building is reduced, in which the gravest forms are often piled on the top, if indeed there be any top, architecture having generally been driven from thence, and clothing only the sides to a certain height, leaving all above to the ventilator and chimney-doctor.

It is now necessary to say a few words on two qualities in architecture and other arts, frequently distinguished from the beautiful, though at other times classed as particular divisions thereof: these are the *sublime* and the *picturesque*.

The inquiry into the sources of the sublime in architecture must on no account be passed over by the architect, as having no application to his every-day practice; for the same principles by which sublimity has been produced in great works, are the only ones by which the opposite of this quality can be avoided in small works; and, indeed, this opposite (viz. *meanness*) is the very worst fault a building can have, and its avoidance is, if possible, more important in little works, than is the attainment of true sublimity in great ones; for magnitude and richness will, with the many, always suffice to cover the want of the latter; while nothing can, in small buildings, stand in the stead of that for which we have no good name, but which would, if increased in scale, be called sublimity.

Alison, in his section 'On the Sublimity of Forms,' seems to have taken a very incomplete view of this subject. He considers it to arise only from two causes: "1st, from the nature of the objects distinguished by that form; and 2ndly, from the quantity or magnitude of the form itself." The forms which are sublime, from the first reason, he classes as, "1, the forms which distinguish bodies that are connected in our minds with ideas of danger or power;"—"2, the forms that, in general, distinguish bodies of great duration;"—"3, the forms which distinguish bodies that are connected in our minds with ideas of splendour or magnificence;" and, "4, the forms which distinguish bodies connected in our minds with ideas of awe or solemnity." The other sources of sublimity in form, he reduces to "magnitude in height," "magnitude in depth," "magnitude in length," and "magnitude in breadth." What these have to do with *form* is not very obvious. The only sublimity he admits, therefore, in form, appears to be such as depends on accidental association. Now, that one form may be more sublime than another, apart from these associations, I take to be proved by the fact, that a majority of spectators are more affected by the sublimity of certain building forms, than by that of others on the *same scale*, and having no less reason to be considered sublime from association. Thus a

Doric temple is admitted to have a more sublime effect than any other building of no greater dimensions, not even the Egyptian buildings being comparable with it in this respect; for the admiration and wonder of Egyptian travellers, it must be remembered, is given to the *chief* structures of that country, —structures compared with which a Grecian temple is a mere cottage. But there *are* buildings in Egypt no larger than those of Greece, and these the traveller merely regards as strange and mysterious, but, though they are the *first* seen, never says a word of their sublimity; yet they have all the associations mentioned above, to a greater degree than their Greek rivals,—are older, more durable, and exhibit more mechanical power in their construction. We can only conclude that the *forms* or *arrangements of form* used in the Doric order, are better suited to produce sublime effects.

The reasons of this will be shown presently; but we may here observe that of the two classes of beauty mentioned at the commencement of this chapter, there can be not a moment's doubt which approaches nearest the character of sublimity; in fact, the beauty depending on contrast seems to require only magnitude of scale to render it sublime; and it can be rendered so by a far less amplification than is necessary with the other class of beauty,—that, namely, depending on gradation. I know of no exception to this in nature or in art. The limestone cliff is more sublime than a rounded hill of ten times its linear dimensions; and the oak, than a bamboo cluster rising thrice as high and spreading twice as wide. We need not be surprised, therefore, that the style of architecture which carries the most contrasted forms (or those of the first class) to the greatest extent, should be that which can attain sublimity with the smallest dimensions. The Parthenon is generally allowed to have attained this object; some even consider the temple of Theseus to have attained it. When we observe that the extreme height of the former is under fifty feet, and that of the latter under thirty feet, and its plan less extensive than that of most

parish churches, it will be seen that these are by far the smallest buildings that ever approached this character. No Gothic building ever possessed a particle of sublimity, unless, at least doubling the extent, and trebling the height, of an ordinary Doric temple. In fact, the buildings erected before the introduction of the arch have in this respect a most enviable advantage over all those in which that scientific invention is admitted. In the works of the Italian school the same difference may be observed. After making allowance for difference of scale, or comparing only those of equal scale, (a most necessary caution in all inquiries respecting relative sublimity,) it will be found that the buildings most affecting this character are those in which the arch is most studiously excluded. Much of the acknowledged superiority, in this respect, of the (otherwise capricious and mannered) designs of M. Angelo, may be traced to this practice. One cannot examine the designs of his portions of St. Peter's, or that much finer work, the Capitoline Museum, without remarking the absence of arches in places where almost any other Italian would have used them, and perceiving that he never employed them where he could possibly make a straight covering serve his purpose. His square-headed windows at St. Peter's are probably the widest ever executed in that form, and must tend, more perhaps than any thing else, to render the exterior grander than that of St. Paul's, where all the windows are arched.

This superior sublimity of square-headed openings and recesses arises not only from their belonging to a graver class of form than the arch, but also, very often, from their greater expression of *power*, owing to our knowledge, or mechanical perception, that they *must* require larger stones in their construction. This somewhat vulgar consideration has, I am convinced, a great deal more to do with our appreciation of sublimity in architecture than we should be willing to admit. Thus, the original Doric cornice has very little projection compared with later forms of that feature, yet it produces

as grand an effect as many cornices that have three times its projection. This arises from the absence of all contrivances for supporting it by corbelling,—from our perception that it cannot possibly be built up of little pieces. Add such contrivances, (as in the Corinthian cornice, or still more obviously in the Gothic machicolations,) and you must increase the frowning mass to several times its dimensions, in order to retain the same bold and noble appearance. So, also, the relative effect of square and of arched coverings above alluded to, is entirely reversed in Gothic architecture. Here, the arched window-head, when sufficiently recessed and overhanging, has some grandeur, while the flat-topped Tudor form has not a particle; being propped up, and, as it were, balanced on the mullions, whose apparent insufficiency for its support only increases the intense *meanness* of expression.

Next to the prevalence of the graver classes of form, and the subordination of the others to them, nothing is more essential to nobleness, than a principle analogous to what painters term *breadth, i. e.* abundance of one thing in one place. On this subject, Ruskin has insisted with his usual eloquence,* and, with great truth, says, "that the relative majesty of buildings depends more on the weight and vigour of their masses than on any other attribute of their design; mass of every thing, of bulk, of light, of darkness, of colour, not mere sum of any of these but breadth of them; not broken light nor scattered darkness, nor divided weight, but solid stone, broad sunshine, starless shade."

A false principle, called *lightness*, has, unfortunately, during the last century or two, crept into the architecture of this country, and done more than any thing else (with one exception to be noticed hereafter) to destroy it. The true meaning of this word lightness has been almost forgotten: it is a general expression for whatever qualities are proper in the upper parts of buildings, and improper in the lower parts. But lightness is with many spoken of as a beauty

* 'The Seven Lamps of Architecture,' chap. III. 'Power.'

in every situation; and, unfortunately, the quality to which they give this name is an unmixed evil, being, in fact, only a name for the opposite of every thing fine and noble,—the exact reverse of the principle of breadth above defined. It is this false idea of lightness which had a great deal to do with the pseudo-Greek mania. The chief beauty seen by many, in our fancied revival of Hellenism, consisted in the easy applicability of its minute breaks to that pasteboard treatment of buildings, peculiar to modern England, of which the author above cited has truly said—"What a strange sense of formalized deformity, of shrivelled precision, of starved accuracy, of minute misanthropy have we, as we leave even the rude streets of Picardy for the market towns of Kent! Until that street architecture of ours is bettered,—until we give it some size [of parts] and boldness,—until we give our windows recess, and our walls thickness, I know not how we can blame our architects for their feebleness in more important work; their eyes are inured to narrowness and slightness: can we expect them at a word to conceive and deal with breadth and solidity? They ought not to live in our cities; there is that in their miserable walls which bricks up to death men's imaginations as surely as ever perished forsworn nun."*

* I cannot, however, agree with the same writer when he considers this great fault in our national taste to be of ancient date. He says, "But I know not how it is, unless that our English hearts have more of oak than stone in them, and have more filial sympathy with acorns than with Alps; but all that we do is small and mean, if not worse,—thin, wasted, and unsubstantial. It is not modern work only; we have built like frogs and mice since the thirteenth century (except only in our castles). What a contrast between the pitiful little pigeon-holes which stand for doors in the west front of Salisbury, looking like the entrances to a bee-hive or a wasp's nest, and the soaring arches and kingly crowning of the gates of Abbeville, Rouen, and Rheims, or the rock-hewn piers of Chartres," &c. The west front of Salisbury is evidently, notwithstanding the uniformity of style, the work of a different architect, with a totally different taste, from him who designed the rest of that sublime fabric; and by only stepping round the corner, we may find in the north

The want of thickness in the walls, and recess in the openings, indeed, renders the whole of the architectural ornament applied to many of our public buildings worse than thrown away, since it makes them more ridiculous (as architectural façades) than they would otherwise have been (as brick walls). Another half-brick added to the 'reveals' would have been worth it all. The draughtsmen of competition drawings are well aware of this source of 'effect,'—and committees should be on their guard against it; for many of the disappointments experienced, when these pretty designs have been executed, may be traced back to the *direct falsehood* of representing their walls twice or thrice as thick as they were intended to be. By a most unfortunate seeming fatality, the great national work of the age (which must have such a powerful influence on its taste) has been doomed to afford an instance of this disappointment. In the original perspective views of its famous river front, (to judge from engravings,) the windows were recessed at least *three feet* from the plane of the wall, but, as executed, they do not seem to be *one* foot therefrom; that is to say, (taking the extent of the front in round numbers at 800 feet by 70,) the glass has been so advanced as to rob the exterior of 112,000 cubic feet of apparent solidity. Now, this single circumstance would be sufficient by itself, if not counteracted, to make *all* the difference between a sublime building and a mean one. But, among many complaints at imaginary grievances, no critic, on comparing the design with the execution, raises the cry of 'Give us back our 112,000 cubic feet.'

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porch something quite as "cavernous" and "rock-hewn" as any of these French portals, with the advantage of more simplicity. Indeed, throughout this building, (with the single exception of the west front,) his principles of "solid stone, broad sunshine, and starless shade," are carried out to a degree not found in foreign Gothic buildings, where the walls being placed near the outer extremity of the buttresses, leave only a portion of each, like a pilaster, and where all the upper parts are frittered into a confused forest of pinnacles.

The imitation of a celebrated façade at Venice, in one lately built in Pall Mall, and the slight alterations introduced therein, have called forth much criticism; but the most important alteration seems to have been overlooked. In the original design, the upper windows are sufficiently recessed to admit, in the depth of each jamb, a column, a space, another column and another space: but, in the copy, there is only room for a pilaster and no space behind it. Thus, this dimension is (to the eye) diminished fourfold.

Do not suppose that the diagonal *splaying* of such parts, as practised in the Gothic (for a constructive reason), may be made a means of cheating the eye into a belief of their greater depth. They will appear much greater when honestly receding at right angles from the front, and hence the great bane of our architecture,—the "four and a half inch reveals,"—may be made more tolerable by the Italian than the Gothic treatment. The strange infatuation that Tudor fashions were suited to our climate and circumstances is now rapidly vanishing; but those who *will* try the experiment for themselves, must first sit down and count the cost, whether they can set back the glass, in the smallest window, nine inches from the face of the wall, and, in the largest, at least a sixth or seventh of the whole width; for, without this, they will only obtain a caricature of Tudorism.

I know there are many instances, in the ecclesiastical Gothic, of very shallow window-jambs, as at Salisbury and in Westminster abbey; but observe between what buttresses they are imbayed. Very different was the practice where these features were less prominent, as in the continental churches, or absent, as in many palatial buildings. In the only cathedral wall without buttresses, viz. the south side of Winchester nave, not only is the recess of the windows enormous, and much less splayed than usual; but the designer, Wykeham, (who was the English Buonarotti, and had a truly Doric genius,) contrived a means of rendering their form more grand, though less pleasing, than the ordinary pointed arch, by making it spring

obliquely from its jambs, so as to have less curvature, and *three* abrupt angles instead of *one*.

On the whole, it would appear that neither sublimity nor satisfactory beauty in building, can be expected of a flat surface with holes in it, however beautiful their forms and arrangement. There must be variety and contrast of surfaces, and large ones too. There is no such thing as fine architecture of only two dimensions; it must have length, breadth, and depth. No building has ever been admired that has not either colonnades, or arcades, or very prominent buttresses, or a very prominent cornice, or very deeply recessed openings. These are the chief means that have hitherto been employed to obviate flatness (though never for that purpose *alone*) in permanent buildings. In temporary ones there have been some other expedients, as the broad eaves of Italy and Switzerland, the overhanging stories of our half-timbered houses, and the verge-boards, best developed perhaps in northern France. When iron shall be admitted into architecture, perhaps a new resource of this kind may be found in balconies or window-canopies, or both: but, as a general rule, all horizontal masses of shadow seem to require a greater and general mass of the same kind at the top of the building; and this is the most general feature in all countries, and is never, in any degree, a merely ornamental one, since its use, to shelter the walls, will always be more effectually served, the more it projects: not an inch added to it can ever be useless.

Another mode of avoiding flatness has, indeed, been often practised in rural buildings, (being inapplicable in towns,) and consists in breaking the ground-plan in a complicated manner, and carrying up some parts higher than others. It has a very specious appearance of effecting the object without unnecessary expense; but this is a great fallacy, as any one may soon see, who makes a few calculations, that these breaks and jetties add more to the material requisite to enclose and cover a given space, and, in fact, are a greater sacrifice to architectural beauty, than the largest features ever added to such buildings, sup-

posing them added for ornament alone, which they never ought to be. When fashion, however, runs mad after some style devoid of prominent features, (as the Tudor,) there is no alternative but this extravagant broken-plan system, as the late Tudor revivers found to their cost.

Of that most highly artificial source of pleasure, called the *picturesque*, there have been several explanations given, all in substance the same as that of Ruskin, who regards it as a "*parasitical sublimity*," or a display, in the extraneous and adventitious circumstances of a thing, of such qualities, as, transferred to the thing itself, would conduce to sublimity: thus the same shagginess which in the lion's mane conduces to sublimity, in the goat constitutes picturesqueness. The same depth, and prevalence of contrast, in a building, which, when produced by evident *design*, leads to nobleness, or at least obviates meanness; when resulting from *chance*, (either by the falling of a building to ruin, or the unforeseen clustering of several buildings together,) constitutes the picturesque. The chance combinations, which, in natural scenery on a small scale, are most picturesque, are the very same which, if magnified to a mountainous scale, would be the most sublime; so that an artist might often from heaps of gravel or mortar, compose scenes more awful than he could find in a year's wandering among Alps. Again, the picturesque in painting, or what is called 'pictorial effect,' consists in applying to the adventitious circumstances of light and shade those same principles and rules which the higher aims of the art would require to be observed with regard to things and actions themselves; so that, for instance, pictorial effect requires one principal light, just as the higher excellences would require one principal action. Whatever would be sublime or excellent in *essentials*, the same is picturesque in *non-essentials*. "There are thus," says this writer, "both in sculpture and painting, two, in some sort, opposite schools, of which the one follows for its subject the essential forms of things, and the other the accidental lights and shades

upon them. There are various degrees of their contrariety: middle steps—as in the works of Coreggio, and all degrees of nobility and of degradation in their several manners; but the one is always recognized as the pure, and the other as the picturesque school." *

It would thus appear that this quality has more affinity with the sublime than with the beautiful, being probably incompatible with the latter in its strict sense, while each of these opposite qualities is compatible with the sublime, at least with what may be called *physical* sublimity, which is the only kind of which we have hitherto spoken.

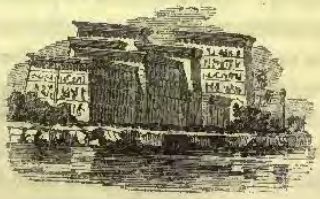
Consistently with this, we might expect the picturesque in building to be most frequent where there is most prevalence of contrast, and the gravest or most contrasted species of forms; and perhaps the best rule that could be given for its production would be the accumulation of all the physical elements above mentioned as conducing to sublimity, with a studied exclusion of those previously described as belonging to beauty, such as uniformity of halves, equidistant repetition, and the principle of gradation in general.

We have already observed that in forms or rather compositions of form, of the first two (or rectilinear) classes, a distinction must be made between those which do, and those which do not, display this principle of gradation; which can occur in the first class only in one way, by a gradated series of *dimensions*, while in the second it may be displayed in two ways, either by gradation of dimensions, or of *directions* (*i. e.* of lines or of angles). The influence of gradated dimensions, in diminishing grandeur and increasing elegance, may be seen by comparing the majority of Italian campaniles (which contain no such gradation) with those of Pisa, Cremona, or St. Bride's, London, (the only one of Wren's designs in which this principle reigns,) or with the Chinese towers, in which it seems universally observed, and contributes not a little to their want of grandeur or solemnity. In the grander and more sturdy

* 'The Seven Lamps of Architecture,' chap. vi.

classes of vegetables too, from the cotton tree down to the thorn bush, this principle is nowhere to be found; while in those few plants of the minor and less durable kind, that contain straight and angular forms, it is carried to extreme perfection, as in the grasses, ferns, &c. It seems as if this elegance were given them as a substitute for that of curvature, common to other delicate vegetable forms.

Now neither these plants, nor the gradated campaniles, would ever be regarded in themselves as picturesque objects, while the first-mentioned class of each is reckoned among the most decided examples of this quality in nature and in art. The beauty of gradation therefore, while it is only prejudicial to real sublimity, is *destructive* of this sort of 'parasitical sublimity,' called the picturesque. Divisions, when not equal, must be varied without any connecting law, as in fig. 1 A, never as in C and D. To show how much a prevalence of the lighter (or more gradated) classes of form also militates against the picturesque, we may observe that this quality was perhaps never ascribed to any natural object whose forms are exclusively curvilinear; and that it is rare in (even the ruins of) round-arched building; more frequent in the pointed; and most of all in those styles which are destitute of arches. The Egyptians often clustered buildings irregularly to suit peculiar sites; and the temple thus built on the island of Philæ has been instanced as a very complete case of picturesqueness, and will illustrate the rules given above.



CHAPTER IV.

IMITATION OF NATURE AND OF MODELS — FALSE IMITATION—CONSTRUCTIVE TRUTH—CONSTRUCTIVE UNITY—THREE SYSTEMS THEREOF.

"The natural appetite or taste of the human mind is for truth—whether that truth results from the real agreement or equality of original ideas among themselves, from the agreement of the representation of any object with the thing represented, or from the correspondence of the several parts of any arrangement with each other. It is the very same taste which relishes a demonstration in geometry; that is pleased with the resemblance of a picture to an original, and touched with the harmony of music."—REYNOLDS, *Discourse* VII.

IT is the highest possible aim of architecture, as of all the other fine arts, to *imitate nature*. This has been generally admitted; but the kind of nature to be imitated, and the mode of imitation, seem to be very variously understood; and the notions of some architectural writers on this point are singularly different from each other, and from the plain ordinary sense of the expression.

Milizia considers the *natural model* which this art is to imitate (and by its correspondence with which, its merit is to be judged) to be a particular form of *timber hut!*—a kind of hut, moreover, which was never yet built, but which the fancy of Vitruvius composed in imitation of a Doric temple, in order to serve as a short and specious way of explaining (without the trouble of investigation into principles) that of which common sense required *some* explanation, however inadequate. If this be nature, and the nature which we have to imitate, the

finest specimens of architecture ever produced would be some of the tombs lately discovered by Sir C. Fellowes, in Asia Minor,—petrified huts, in which all the structural minutiæ of the carpentry, down to its treenails, are correctly represented in stone. But the idea that an art is imitating nature, by imitating its own rudest productions, can hardly be stated without exciting ridicule.

Very different is the model and kind of imitation set before us by that enlightened critic M. Quatremère de Quincy, who observes,* that architecture should imitate nature itself in the broadest sense, and not any particular natural object,—should imitate, not as a painter does his model, but as a pupil does his master,—not by copying what nature presents, but by doing as nature does. The highest kind of imitation in every art may doubtless be reduced to this principle; but it is the peculiarity, and should be the boast, of architecture, that it consists in this highest and most difficult kind of imitation *alone*, and has not, like painting and sculpture, any low, narrow, matter-of-fact imitation (more properly called copying), in which those who are incapable or unprepared for this only real imitation may take refuge.

The difference between copying natural objects and imitating nature, lies in the introduction, in the latter case, of a principle of *generalization*. To draw the likeness of a particular man, ever so exactly, though you excelled the daguerreotype, is not imitating nature. To discover and draw *all that is common* to a certain class of men, omitting every thing *that is peculiar* to each, this is imitating nature. The same principle must run through every imitation of her, as distinguished

* Il faut dire que l'architecture imite la nature, non dans un objet donné, non dans un modèle positif, mais en transportant dans ses œuvres les lois que la nature suit dans les siens. Cet art ne copie point un objet particulier, il ne répète aucun ouvrage, il imite l'Ouvrier et se règle sur lui. Il imite enfin non comme le peintre fait un modèle, mais comme l'élève qui saisit la manière de son maitre, qui fait, non ce qu'il voit, mais comme il voit faire.

from an imitation of a natural object; and it must be remembered, that with this latter imitation, architecture has nothing to do. A man may learn to paint or carve, simply by imitating individual models, and may with the vulgar pass for an artist: but in architecture there is no such thing as this copying of one thing at a time; the architect (I mean the *designer* in architecture) must learn to copy several things *at once*,—to imitate with generalization.

That which is common to the whole of a given class or kind of objects, is called their *nature;* and it is the business of artistic generalization to discover, extract, and exhibit by itself (separated from their peculiarities) this nature, this general idea which pervades the said class of objects; and of which Sir J. Reynolds observes,—"This general idea, therefore, ought to be called nature; and nothing else, correctly speaking, has a right to that name. But we are so far from speaking in common conversation with any such accuracy, that, on the contrary, when we criticise Rembrandt and other Dutch painters who introduced into their historical pictures exact representations of individual objects, with all their imperfections, we say—Though it is not in a good taste, yet it is nature."—"This misapplication of terms must be very often perplexing to the young student. Is not Art, he may say, an imitation of Nature? Must he not, therefore, who imitates her with the greatest fidelity, be the best artist? By this mode of reasoning, Rembrandt has a higher place than Raffaelle. But a very little reflection will serve to show us that these particularities cannot be nature; for HOW CAN THAT BE THE NATURE OF MAN, IN WHICH NO TWO INDIVIDUALS ARE THE SAME?"

But the artist has not always (perhaps never) thus to generalize and embody the nature of a whole species. Having commonly to express some particular quality of mind or body, his generalization is confined to those individuals who possess this quality. Thus, as the same philosopher and artist observes, the Apollo, the Hercules, and the Gladiator are each

representations not of an individual but of a class. There was, however, an incompleteness in his theory, owing to its taking no account of a certain kind of *exaggeration* practised by the ancients in their most admired specimens of artistic generalization. The above examples will illustrate this. The Hercules was not, as he supposed, the *central form* of the class represented, or, in other words, the simple embodiment of what was common to the class of strong men: if so, it would merely have represented a man of moderate strength. The object, however, was to represent *super-human* strength; and this required a more refined and extensive generalization: it required an investigation and analysis, not only of whatever was common to all the strong, but also of whatever distinguished them as a class from the rest of the species, or from the class most opposed to them. Perhaps it could not have been effected without as much observation and study of the *weak* as of the strong. It required a distinct knowledge not only of the central form of strength, but also of the central form of weakness, or at least of the whole species, including the weakest. This was necessary, in order that the general differences distinguishing the central form of strength from the central form of humanity might be exaggerated,—might be pushed *further* than in the central form, but yet pushed precisely *in the right direction*, without the slightest deviation to the right or left; for that would have been *caricature*,—it would have been exaggerating, not the general idea of strength, but some peculiar form of strength. This makes the whole difference between the highest and the lowest kind of art. The exaggeration of a general idea is *idealization;* the exaggeration of an individual peculiarity is *caricature:* one consists in exaggerating what has been obtained by generalization from *many* models; the other, in exaggerating what has simply been copied from *one*.

Sir C. Bell, the eminent physiologist, had the merit of first showing that all the antique statues owed a part of their excellence to another very refined species of this exaggeration.

It had been long known that none of them presented what Sir J. Reynolds terms the central form of the species; but that, (besides the deviations from that form, given to express particular qualities,) there was also a general deviation therefrom, *common to them all*, even to those which were not intended to express any peculiar quality; and this general deviation of the antique from the natural, led to no small difficulty, as the deviations from centrality or the mean form were so obvious, as to pass in some cases even beyond the limits of nature, (the facial angle, for instance, being greater than in *any* individual,) and yet these unnatural peculiarities were allowed by every eye to be beautiful, and expressive of singular intelligence. It was even supposed that the species had degenerated, while others attributed these super-human traits to tradition, handed down from the unfallen state of man. But Sir C. Bell showed that they were simply the exaggeration of whatever distinguishes man from the lower animals. These works must therefore have required a truly wonderful knowledge and study of the animal forms as well as the human, so as to elicit, as it were, the central form of *animals*, or of a large portion of them, including several species, in order to discover in what points the general idea of humanity differed from this general idea of animal form, and then, by the exaggeration of these peculiarly *human* traits, (purified from every *individual* trait,) to embody, in the only way possible, the idea at which they aimed, viz. something *super*-human, *i. e.* further removed from the animals than man is, but in the same direction. But we can hardly sufficiently estimate the nicety and the vastness of generalization that must have been requisite so to purify these human traits from every individuality, that even, when exaggerated, no such individuality should be brought out, and constitute caricature.

Now, it is by such methods as these that nature is to be imitated—*has been* imitated by architectural designers. If nature had produced complete buildings, true architecture would consist in a *generalized* imitation of them, or of a por-

tion of them, viz. all such as were destined to the same purpose as the building in hand. Though Nature has not done this, she has produced objects, and parts of objects, agreeing in certain points of their destination or their expression, with buildings, particular classes of buildings, and parts of buildings. Is a building or a member, then, required to have a particular character or expression? There is only one way of giving it, viz. by collectively examining all, or as many as possible, of those works of nature which have this particular character,—all which agree in this point (but the more widely they differ in other points the better)—by analysing them and extracting that which they have in common, carefully rejecting every thing in which they differ; for, in whatever points they *differ*, these are proved by that very difference to be things non-essential to the character required; but in whatever points they *agree*, these constitute nature's mode of expressing that particular character, and it is *the only mode*. When thoroughly eliminated and refined from all things not essential to it, then, and *not till then*, it may be pushed further than in any work of nature, and thus give the required expression more strongly, as well as more perfectly, (with less mixture) than nature ever gives it.

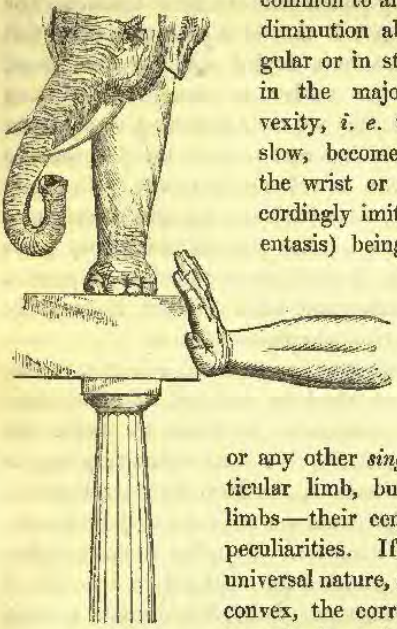
It is by a particular application of this principle that we discover *angularity* to be an important part of Nature's mode of expressing *force*,—and *reflexed curvature* to be part of her mode of expressing *delicacy*. The same method must be applied to every variety of character, even down to the character proper to a particular part or member, having a particular destination. We must bring together, and imitate *in one*, all those natural objects that have this same destination. We must take as many models as possible, resembling each other in this point only, and differing as widely as possible in every thing else; and then, carefully avoiding every thing in which they differ, we must carefully embody every thing in which they agree. Here is an example:

We want a column, that is, a long body, intended for

transmitting pressure to or from a flat surface. It evidently matters not whether the column be pressed against the surface or the surface against it, nor in what position it be placed. A strut is a column, only placed horizontally or inclined. The expression we want to give is that of fitness to receive this pressure. Some nations have copied columns from trees, and some from men, but neither of these are imitating nature; on the contrary, they are most unnatural, since nature has not made either a tree or a man to serve the purpose of a column. Are there, then, no columns in nature? Certainly there are. The limbs of all animals are columns according to the above definition, the surface against which they press being the ground. The human arm uplifted to support a weight is also a column; and when pushing horizontally against a wall, it is a horizontal column or strut.

Now, in comparing these various natural columns, to discover what they have in common, we find, 1st, that their transverse section has *roundness*, therefore we make the artificial column round. 2ndly, We observe that they vary in length from *four* to *ten* times their greatest diameter, but that, in animals remarkable for power and majesty, they do not exceed *six* times the said diameter. Therefore when this character is aimed at, the columns are confined to a length of between four and six diameters. 3rdly, With regard to their longitudinal outline or profile, they have a general diminution from their origin to the ankle or wrist, *i. e.* to a point *near* the surface against which they are applied. Therefore we make the artificial column diminish from its origin (the ground or stylobate) to a point near the surface to be sustained. This diminution is in a contrary direction to that of the legs of animals or furniture, because *they* issue from the object to which they belong, and apply themselves against a surface below; but the legs of a *fixed* structure should issue from the substructure, and apply themselves to the support of that above; otherwise they would appear to belong to the superstructure and form with it one mass, distinct from that below,

and made to be moved about like a table.* The *position*, therefore, of the column, is not that of the leg, but that of the uplifted arm. 4thly, Another circumstance common to all the models, is that the diminution above noticed, is not regular or in straight lines, but tends, in the majority of cases, to convexity, *i. e.* the diminution, at first slow, becomes more rapid towards the wrist or ankle; and this is accordingly imitated, the convexity (or entasis) being, however, much less than in the human example, because in that example it is peculiarly great; and the object is not to imitate this or any other *single* model, not any particular limb, but the general idea of limbs—their central form, avoiding all peculiarities. If their outline were, in universal nature, as frequently concave as convex, the correct imitation would be to make it straight; but this is not the case,—convexity predominates over concavity, and *very slight* convexity predominates over that which is more decided. 5thly, We observe it to be a part of the nature of limbs, that, after passing the smallest part, there is a rapid swelling to form the extremity (hand or paw), which is what, in the



* An eminent architect has attempted to explain this, by asserting as a rule, that bodies must diminish as they *recede from the eye*, as a column upwards, or the leg of a table downwards. He does not give any reason or foundation in nature for this rule; but it would be very desirable to do so, as it would overturn many long-established prejudices in architecture, and lead to some curious novelties, such as the downward diminution of balusters, pedestals, &c.

column, we call its *capital*. This protuberance is, in nature, commonly eccentric with regard to the axis of the limb, projecting most on the side towards which the animal looks, and least (or often not at all) on the opposite side. But this eccentricity is least in the most powerful animals, and is properly omitted in the column for two reasons; either as an exaggeration of that which distinguishes the most powerful models, *i. e.* those most displaying a quality intended here to be expressed; or else it is omitted as having an obvious relation to a property *not* intended to be expressed, viz. locomotion: for the foot always projects most on the side towards which it is to move; and as the capital is not to move, there is no natural example for its projecting on one side more than another. 6thly, With regard to the outline of the extremity, we find it to be at first concave for a very short distance, then becoming very slightly convex, and as it spreads, the convexity slowly increases, till, at the greatest protuberance from the axis, it rapidly curves round and returns inward to a small distance. Such are the points common to the outline of *every* animal extremity, when applied against a flat surface; and such are those which constitute the profile of the capital, in that wonderful specimen of generalized imitation, the original Doric column; that form on which no subsequent efforts have been able to effect any improvement in fitness of expression to its particular purpose; that form which when first seen, so throws into the shade every thing else that we have ever seen applied to the same purpose, that it seems too perfect for a human invention, and we attribute it to some power peculiar to the inventors, and now lost, just as the Arabs attribute Palmyra to the work of genii. That this pile of cut stones, which any mason could exactly reproduce, and which resembles no natural form, should yet express its destination as perfectly as the most finished statue, and appear as incomplete without its entabulature, as Atlas without his globe;—that this effect should be produced alike and instantly on every spectator, may well appear, to the untaught, a sort of magic. But such effects

are never the result, as commonly supposed, of a happy idea, an instant stroke of genius: they thus touch in an instant, because they contain the work of years; they spring from, and are proportional to, the *amount of thought* which the object embodies, and this is independent altogether of the amount of manual labour bestowed. A work of elaborate sculpture, and one of mere masonry, may be exactly equal in this respect; and when either of them strikes us with this instant conviction of excellence, it is because they contain, as it were, concentrated in them, the thought perhaps of a life, perhaps of many lives, the observation and analysis and intense patient study of *many*, directed all in one direction, and with a common object,—the extraction and purification of some general idea in nature, as a metal is extracted by the chemist.

In the study of nature (without which the architect as well as every other artist can do nothing—absolutely nothing) he must also study the commentaries on her, *i. e.* all previous productions of his art. All these are so many annotations on Nature's great and most difficult book; and he who attempts to read her without their assistance, simply sets up his own wisdom against that of all mankind; and however satisfactory his discoveries may be to himself, he may be assured that they are as old as Adam; and that, should he have at once the greatest genius and the longest life ever granted, he will still have advanced no further than the first efforts of the art, which, pursued on this principle, would (unlike all other human pursuits) be never beyond its beginning.

It is impossible for the designer to produce any thing *true* but by the study of nature, and it is impossible to produce any thing *new* but by a knowledge of what has been done already by his predecessors. The most *original* artists of every kind are always the most extensive imitators.

On this point, Sir Joshua Reynolds observes (and the observations are equally applicable to every art),—"The greatest natural genius cannot subsist on its own stock. He who resolves never to ransack any mind but his own, will be

soon reduced from mere barrenness to the poorest of all imitation; he will be obliged to imitate himself, and to repeat what he has before often repeated. When we know the subject designed by such men, it will never be difficult to guess what kind of work is to be produced."—*Discourse* VI.

"Those who either from their own engagements and hurry of business, or from indolence, or from conceit and vanity, have neglected looking out of themselves, as far as my experience and observation reaches, have from that time not only ceased to advance and improve in their performances, but have gone backward. They may be compared to men who have lived upon their principal till they are reduced to beggary and left without resources."—*Discourse* VII.

"It is indisputably evident that a great part of every man's life must be employed in collecting materials for the exercise of genius. Invention, strictly speaking, is little more than a new combination of those images which have been previously gathered and deposited in the memory:—nothing can come of nothing; he who has laid up no materials can produce no combinations."—*Discourse* II.

"The more extensive, therefore, your acquaintance is with the works of those who have excelled, the more extensive will be your powers of invention, and, what may appear still more like a paradox, the more original will be your conceptions."—*Discourse* II.

As in the imitation of nature, however, so in that of nature's imitators,—nothing can come of the imitation of only *one* model. There must still be the same method of *generalization*, the collection from many, of that in which they agree, and the rejection of that in which they differ. The copying of one model, or one master, or one manner, will simply be caricature. On this head, the same author observes—

"When I speak of the habitual imitation and continued study of masters, it is not to be understood that I advise any endeavour to copy the exact peculiar colour and complexion of another man's mind; the success of such an attempt must

always be like his who imitates exactly the air, manner, and gestures of him whom he admires. His model may be excellent, but the copy will be ridiculous. This ridicule does not arise from his having imitated, but from his not having chosen the right mode of imitation."—*Discourse* VI.

"Peculiar marks I hold to be generally, if not always, defects, however difficult it may be wholly to escape them.

"Peculiarities in the works of art are like those in the human figure; it is by them that we are cognizable and distinguished one from another; but they are always so many blemishes, which, however, both in real life and in painting, cease to appear deformities to those who have them continually before their eyes. In the works of art, even the most enlightened mind, when warmed by beauties of the highest kind, will by degrees find a repugnance within him to acknowledge any defects; nay, his enthusiasm will carry him so far as to transform them into beauties and objects of imitation."—*Discourse* VI.

Much of the imitation of particular past styles of architecture consists wholly in the imitation of their *peculiarities*,—of those things by which we know them at first sight, and which any mason may copy. The real excellences, those things in them which are not Roman or Gothic or Italian, but *natural* and *universal*, (though better developed in one style than another,)—these lie too deep below the surface of the old buildings to be transferred without study and generalization, and so they are left there. Many an inessential peculiarity too is mistaken for a beauty, even when copied and caricatured,—and this is especially liable to be the case in that style which we have most continually before our eyes. The same author observes—

"However, to imitate peculiarities, or mistake defects for beauties, that man will be most liable who confines his imitation to one favourite master; and even though he chooses the best, and is capable of distinguishing the real excellences of

his model, it is not by such narrow practice that a genius or mastery in the art is acquired."

And after remarking how Raffaelle imitated all the styles then known, *at once*, and without their peculiarities, (which was also the case, as will be seen, with Dorus, with the inventors of the early Pointed style, with Palladio, and indeed with all the most original architects, more or less, as they were more or less original,) he adds,—"And it is from his having taken so many models, that he became himself a model for all succeeding painters—always imitating, and always original. If your ambition, therefore, be to equal Raffaelle, you must do as Raffaelle did,—take many models, and not even *him* for your guide alone, to the exclusion of others. And yet the number is infinite of those who seem, if one may judge by their style, to have seen no other works but those of their master, or of some favourite whose *manner* is their first wish and their last."

In architecture the number of such is indeed infinite: and while one appears to have seen no building besides the Temple of Ilyssus; another, nothing but the Erechtheum, or Salisbury Cathedral, or Henry the Seventh's Chapel, or the Alhambra; all unite in condemning that architect in the last century who drew from no source but Diocletian's palace, without perceiving that they are committing the very same capital error; for the fundamental fault was not the drawing from a *corrupt* source, but the drawing from *only one* source.

The reader must not suppose I am advising any thing so utterly wrong and contemptible as the *mixture of the peculiarities* of different styles. On the contrary, I am insisting on the imitation of what is common to them, rather than that of what distinguishes each. If you say 'there is nothing common to them but walls and a roof,' you betray that you have not commenced the real study of the art, which, like that of nature or of science, can be carried on only by generalization.

As in all other arts, so in architecture, the value and

correctness of imitation, whether of Nature directly, or of Nature through the medium of her interpreters,—previous artists, depends entirely on the breadth of generalization accompanying it; and that which simply imitates without generalizing,—that which imitates only one model, though even a natural one, and ever so excellent, is not art at all.

Connected with the error that imitative art consists in the imitation of what is commonly called nature, *i. e.* of particular or individual nature, is also the most destructive notion that its perfection is to "deceive the eye," which is, in fact, the basest purpose to which any art, or rather any skill and science originally amassed for the purposes of art, can be prostituted: for it must be observed, that no manual dexterity can be called art; it is only the material collected for its use, or the language in which it speaks. Now, when this is used in order to deceive in any way, it is as if a man, who had learnt writing in order to write sermons, should employ his skill in committing forgery.

"For want of this distinction," says Sir Joshua, (*i. e.* the distinction between the art and the mechanical skill,) "the world is filled with false criticism. Raffaelle is praised for naturalness and deception, which he certainly has not accomplished, and as certainly never intended." It is the same error which leads the vulgar to think it a beauty when the figures of a picture stand out "as if you could walk round them," or when painted decorations, or papering, or carpets are shaded to appear (in a particular light) as if carved; or when a building, or a front of a building, or any the smallest part or member thereof, appears like any thing which it is not;—a new building like an old one built in a different age; several little houses like one palace; or one property like several; an essential part like an ornament, or an ornament like an essential part; a buttress like a column, an attic like a pediment, an arch like a lintel;—to say nothing of such gross frauds as making stucco look like stone, or paint like wood.

The object of all real art, as of all science, is to elicit TRUTH; but any one who, fresh from nature, or from the works of other ages or nations, should arrive among the works of modern English architecture, would suppose its whole aim, and that of every detail in it, to be DECEPTION. One enters a building, perhaps a place of worship, that is praised for *unpretending plainness*, and the eye seeks in vain for a single object on which it can rest as something real,—for a single feature that is what it appears to be. The plastered walls pretend to be built of huge granite or marble blocks; the flimsy surface that conceals the roof, to be composed of lacunariæ, or stone coffer-work, on a more colossal scale than any Egyptian ever dreamt of. A stove must represent an useless pedestal, or, perhaps, the model of a building; and the deal fittings, not content with one deception, must with singular ingenuity contrive to perpetrate two at once,—to appear in *substance* like oak, and in *form* like the marble walls and antæ of a Greek temple. Such is an *unpretending* building. The evil so infests every thing that meets us on whatever side we turn, that it is hardly possible to realize the fact, till we turn to the works of other ages or distant nations, that *all this is unnecessary*, that there may be, and over most of the world *is*, and every where *has been*, architecture WITHOUT DECEPTION,—not without this or that kind of it, but absolutely without ANY. Such is the atmosphere of it in which we are plunged, that we can hardly fancy such a thing as its absence; and we actually, on mentioning it, are met by such questions from intelligent and otherwise well-informed persons, as 'What is the use of paint, if not to imitate other things?' Grown-up men actually require to be told that paint is a durable and smooth coating for perishable or rough surfaces, either to preserve them, or by its smoothness repel dirt, or to replace their natural colour by one more pleasing or fitter for their situation, or lastly, to adorn their surface by varied colour or beautiful forms. These are the uses of paint, and they give

vast scope for design and taste, but have no more to do with imitation or deception than the skin of an animal or plant has. Does the skin or bark imitate flesh or wood? What possible reason then can there be for stucco or paint to represent any thing but stucco or paint? They never represent any thing else in the works of the Greeks, Romans, Gothicists, or Arabs; and when we want *more* ornament than is found in their works, it will be time enough to look for a method not practised by them.

Ruskin, who, though falling into many dangerous fallacies, has truly treated on this subject, says—"It is very necessary in the outset to mark clearly wherein consists the essence of fallacy as distinguished from supposition: for it might be at first thought that the whole kingdom of imagination was one of deception also. Not so: the action of imagination is a voluntary summoning of the conceptions of things absent or impossible; and the pleasure and nobility of the imagination partly consist in its knowledge and contemplation of them as such, *i. e.* in the knowledge of their actual absence or impossibility at the moment of their apparent presence or reality. When the imagination deceives, it becomes madness. It is a noble faculty so long as it confesses its own ideality; when it ceases to confess this, it is insanity. All the difference lies in the fact of the confession, in there being *no* deception. It is necessary to our rank as spiritual creatures that we should be able to invent and to behold what is not; and to our rank as moral creatures, that we should know and confess at the same time that it is not.

"Again, it might be thought, and has been thought, that the whole art of painting is nothing else than an endeavour to deceive. Not so: it is, on the contrary, a statement of certain facts in the clearest possible way. I desire to give an account of a mountain or of a rock: I begin by telling its shape; but words will not do this distinctly, and I draw its shape, and say, 'This was its shape.' Next, I would fain represent its colour; but words will not do this either, and I dye the paper

and say, 'This was its colour.' Such a process may be carried on until the scene appears to exist, and a high pleasure may be taken in its apparent existence. This is a communicated act of imagination, but no lie: the lie can consist only in an *assertion* of its existence, (which is never for one instant made, implied, or believed,) or else in false statements of forms or colours (which are indeed made and believed to our great loss continually). And observe also, that so degrading a thing is deception, in even the approach and appearance of it, that all painting which even reaches the mark of apparent realization, is degraded in so doing. * * *

"The violations of truth which dishonour poetry and painting are thus, for the most part, confined to the treatment of their subjects: but in architecture another and a less subtle, more contemptible violation of truth, is possible; a direct falsity of assertion respecting the nature of material, &c.; * * and this is, in the fullest sense of the word, wrong; it is as truly deserving of reprobation as any other moral delinquency; it is unworthy alike of architects and of nations; and it has been a sign, wherever it has widely and with toleration existed, of a singular debasement of the arts: that it is not a sign of worse than this, of a general want of severe probity, can be accounted for only by our knowledge of the strange separation which has for some centuries existed between the arts and all other subjects of human intellect, as matters of conscience. This withdrawal of conscientiousness from among the faculties concerned with art, while it has *destroyed the arts themselves*, has also rendered nugatory the evidence which otherwise they might have presented respecting the character of the respective nations among whom they have been cultivated; otherwise it might appear strange that a nation so distinguished for its general uprightness and faith as the English, should admit in their architecture more of pretence, concealment, and deceit, than any other of this or past time."—'*Seven Lamps of Architecture*.' II. '*Truth*.'

It will be asked, perhaps, 'Must we not turn the best side

outwards then?' Certainly, this is an important part of the courtesy of building. It is a mark of respect due to all who see your work, to turn them its best side; but it is still more important to do so honestly,—to proclaim at the same time 'This is my best side.' Herein consists the whole difference between the incrustations of mean materials with richer ones, practised in times and places of good taste, and in those of bad. The covering of a poor or unsightly material with a better, does not necessarily lead to deception, or any thing of the sort. Many churches in Italy are said to be *veneered* with marble; that is, thin slabs of marble are let in and confined by surrounding bands of stone, as the metopes of a Doric temple by the triglyphs, or as panels are confined in joinery. There is no deception, the whole shows plainly what it is,—a sound piece of construction held together not by cement, but by obvious mechanical arrangement; and the marble slabs pretend to be nothing more than slabs,—beautiful natural objects placed there for ornament or cleanliness, and not for deception. But if this practice were introduced in England, we should immediately have all sorts of deceptive contrivances, as in a veneered table, to hide every part of the real work, and by flimsy invisible construction (or rather cementation) to make it appear built of marble,—to make it one huge lie; in which, as soon as we are undeceived, we perceive clearly that the richer material was never introduced either for convenience, durability, or beauty, but only for *deception*, to appear more costly; every other object being sacrificed for this, since it would be both more durable if constructed instead of stuck together, and more beautiful with two materials properly arranged, than with only one. If you cannot beautify without deceiving, do not beautify at all. Rudeness is better than a lie.

When an external film is of a totally different nature from the substance beneath, the form will often inform us that this external substance cannot be that of which the whole is composed, and thus there will be no deception. This is the reason that *gilding is no deception* when not applied to

metals. We can no more mistake a gilded stone or plaster ornament for one of gold, than a stone-coloured metallic object for one of stone, because the peculiar mechanical properties of a malleable metal would prevent its ever being made into the same form as stone or plaster (unless for deception). Metals, woods, and brittle materials are known from each other, independently of colour, by the three characters of form to which their respective properties lead. Hence gilding can never deceive *except upon metals;* and upon these we shall accordingly never find it applied in times of good taste,—at least, never as a *total* covering.*

In coloured *decoration* on flat surfaces, all shadowing (*i.e.* representation of the effect of solidity and relief) is a direct falsehood, whether it deceive or not. But observe the difference between *decoration* and *picture.* A picture (whether with or without background) is *one thing,* an independent whole, distinct from all surrounding things, and therefore requiring to be separated from them by a frame or border (either painted or in relief): but *whatever has no frame is no picture;* it is *decoration,* and comes under a different principle of design altogether, being not a *whole* but a *part.* Now, decoration is of two kinds, consisting either of forms in relief, or of colours on the flat; but the latter is given up, and loses its separate exist-

* Having been by a friend referred, as an example of decorative deception, to the *overlaying of gold* on various parts of the Mosaic tabernacle, I offered to renounce the principle now insisted on, if there should be found in that description any instance of gilding *upon metals.* Upon reference, I find *no such instance,* and have hence been more confirmed in this opinion. It may further be observed, that none of that overlaying, even on wood, could have been a *total* covering, even in the later and more splendid works of Solomon; for though it is recorded of the cedar covering on the walls (as if a remarkable fact) that "there was no stone seen," it is not said of the subsequent overlaying of gold, that there was no *cedar* seen. We may conclude it to have been something of the nature of the brass inlaying or overlaying common on furniture of the seventeenth century. Indeed, we are told of a frieze of cherubs and palm-trees, that these figures [and not the ground] were gilded.

ence if it attempt to ape the former; we have no longer two kinds of decoration, but only one, viz. carving and sham-carving.* But you say, the flowers are ugly without shading, and that if they are imitated at all, why may not their shades be imitated? Here we come to the root of the whole fallacy. *You have no business with imitated flowers,* in the vulgar acceptation of *imitated,* i. e. *copied* ones. Their place is in picture, not decoration. No natural flower is fit or beautiful in decoration; if it were, it would not be fit or beautiful in nature. The notion, at present very common, that natural (*i. e.* particular) flowers should be imitated in decoration, is most false and *unnatural.* No one thing in nature is natural enough for decorative use. This art, like architecture, must generalize,—must copy not a natural form, but a natural idea. Its flowers are as false, when copied from single natural models, as columns would be if copied from a single natural limb. In the whole of the works of those who used the *most* ornament, and (by universal consent) the *best,* viz. the Greeks, Romans, Gothicists, and Arabs,† we may challenge the production of

* That the inimitable painter employed shadowing in the decorations of the Vatican, is only a striking proof that no man can do right out of his own kind of art. A good painter cannot be a good decorator, but an architect *may,* because his art is of the same kind; for, of the four arts of design,—sculpture, painting, architecture, decoration,—the two former are of a different kind from the two latter. All have to generalize, but the former require less extensive generalization of *forms,* and are confined always to one natural species. They are *languages,* and special natural forms are their *words.* The writers have no business to coin new words. But architecture and decoration, I must repeat, are *not* phonetic. The distinction is so great, that though many great artists have united the two former arts, not one of them has succeeded in architecture. Even the great Buonarotti failed here, though his *failure* was more noble than the *success* of most architects; for though he produced no work altogether fine, he advanced the art, and taught it new (or previously forgotten) truths, which render his faulty works invaluable to us.

† It is no easy problem for the *naturalist* decorators, to explain how their art came to such unrivalled perfection among a nation whose religion forbad all copies of natural objects.

one example (except in times of acknowledged debasement) of what are called natural flowers, that is, *sham* flowers.*

If you say shadowings produce boldness and (if properly treated) *breadth* of effect, so do masses of dark colours, without deception, equally well; for proof of which, you are referred to ALL the designs of the above schools† without exception. Decorative designers seem to produce few *forms* not drawn from those exhaustless sources: it is to be wished they would copy some of their *principles*.

Much stir has been made, of late, about our inferiority, in all matters of taste, to neighbouring nations, who however are rapidly descending to our level;‡ but this stir is utterly vain among a people with whom *art* means *deceit*. Until we can be taught that nothing is beautiful which is not TRUE, we shall find taste a jewel beyond the reach of all England's wealth to buy, and of all her power to win.

The falsehoods hitherto noticed are only chosen as instances of the grossest kind, and without the correction of which, there can be no hope of correcting others of a more refined nature. But, in fact, the whole progress of the art (when in a progressive state) consists in the discovery and correction of falsehoods, continually of a more and more refined (*i. e.* more general) character,—the elimination of more general truths, and the sacrifice to them of narrow or partial truths, when

* Whatever has been said of flowers applies, of course, to leaves and every vegetable form; but not to animate forms, as those at Pompeii and the Vatican. I do not say they are right, but we must not overlook this important difference. An animal is a *whole*,—a vegetable form is only a *part*. Each animate form is, in some sort, an independent *picture*, its own outline being its frame: but we never see the whole of a plant, nor would any decorator think of representing its root, which is the only way of making it a whole.

† At least for *boldness;* but *breadth* is not so common with the Gothicists and Arabs, though universal with the ancients.

‡ Tasteful decorative design will soon have to be sought further than France, as the lately excellent school of that country is now quickly sinking under the corruption of English influence.

necessary. Sometimes the truth of particular members must be sacrificed to that of the whole, as in Gothic architecture of the purest kind; in which the smallest coverings or heads to openings, though not constructed on the arch principle, are nevertheless made to resemble arches, in order to carry out the chief *general truth* of that style, which is *arcuation*, or the exclusive use of this mode of covering openings and spaces.

CONSTRUCTIVE TRUTH and CONSTRUCTIVE UNITY are the two most important principles to be borne in mind, in tracing the history of architecture, and are indispensable in any attempt to rival, or even understand, the productions of the two standard or perfected systems which the world has hitherto seen,—the Greek, and that commonly called the Gothic.

CONSTRUCTIVE TRUTH requires that a building shall never appear to be constructed on different statical principles from those really employed in its construction. *The whole of modern Gothic architecture is a constructive falsehood*, because it will presently be shown that all the peculiarities of this style grew from the practice of constructing, within buildings, a vaulted ceiling of stone, and were solely adapted to a building with such a ceiling. Consequently, when applied to a building not so ceiled, the style must either be made useless and meaningless, by copying only its forms without a motive; or else, if correctly copied (*i. e.* preserving the apparent motive, either externally or internally, or both), it must then appear (either externally or internally, or both) to have a vaulted ceiling, which it has not; and, in either case, the whole must be a lie from the foundation to the finials.

It is no answer to this to say there are old Gothic buildings without vaulted ceilings: so was there a Grecian example of a sham colonnade, and an architrave built up of little stones.* It is impossible that the taste of a whole nation can ever be so pure as to allow no lies to be perpetrated by false artists.

* At Agrigentum, in Sicily.

CONSTRUCTIVE UNITY is a principle no less important than any other unity, and bears an especial analogy to *unity of style*, being in fact the same thing in construction as the latter in decoration. I assume that no one disputes the necessity of an uniform style of ornament throughout the same building. Now, construction is a more important thing than ornament, and has more relation to the higher excellences of the art. Architectural beauty is not mere beauty of *form*, mere eumorphy; if it were so, a beautiful form would be beautiful wherever exhibited, in a pepper-box or a tower, a baluster or a column. In all the more important features (indeed all but the merest ornaments), the beauty of abstract form is to be sacrificed to that of statical fitness; but in order that this may be seen or appreciated, it is necessary that the various *pressures* be perceived, or a part of them, to which part the members may be seen to be fitted. Consequently, if it be necessary that the treatment of geometrical *forms* be consistent throughout, it is far more necessary that the treatment of these *pressures*, or of the displayed portions of them, be consistent throughout.

Now, there are three distinct modes of treating the pressures of a building, or, in other words, three *styles of construction*. They are all mixed indiscriminately in every modern building; but it is the peculiar merit of the two hitherto perfected architectural systems, the Greek and the Gothic, that in the pure examples of each, only *one* of these modes of construction was seen. This is what distinguishes those two styles from all others, and the pure period of each from preceding and following periods,—*constructive unity*.

Perhaps I should rather call it *unity of statical design;* for the actual construction has never, except in Egypt, been absolutely pure throughout: but a portion of the construction is unavoidably hidden in every artificial structure, as it is even in every natural one. Now, the artists of the two pure periods (those of Pericles and of Edward I.) made this unseen portion the only discordant portion of the construction; so that all the

visible construction—all the *statical design*—was uniform, as well as the geometrical design.

The three styles of statical design were well pointed out in the very useful work of the late A. Bartholomew.* They depend on the three modes of applying force to solids, by *cross-strain*, by *compression*, by *tension*. These are, of course, familiar to the reader who has looked into the rudiments of constructive science, to be found in several of the volumes of this series.

The first and simplest mode of construction, that employed by all barbarous and infant nations, is the only one which subjects materials to *cross-strain*, the most wasteful mode of employing their strength. The method, however, may perhaps be described in the most general terms as that of *vertical pressure*, because all the pressures throughout the building act wholly in their natural direction, vertically downwards; and for this purpose all the continuous joints, or beds, throughout the structure are made *horizontal*, and all the interrupted joints *vertical*. All openings are covered without any deviation from this rule, by laying a beam, lintel, or architrave across from pillar to pillar, resting on the flat tops of both; and all ceilings, whether in stone or wood, are formed by an extension of the same method: the roof framing, being concealed both from the exterior and interior, forms no part of the design, and by the Greeks it was probably constructed on the third method, that of tension.

During the prevalence of this first constructive style in its purity, *every oblique pressure* was excluded, as contrary to the principles of sound architecture. The introduction into architecture, however, by the Etruscans and Romans, of the new constructions called the *dome*, *arch*, and *vault*, all depending on oblique pressure, gradually destroyed the consistency of this first architectural system, the forms of which, owing to the intrinsic beauty imparted to them by the Greek genius,

* 'Specifications for Practical Architecture,' &c.

were not readily abandoned, but continued to linger on, though more and more debased in geometric beauty, and forming harsher and harsher incongruities with the new constructions; till, in the eleventh and twelfth centuries, the great extent of church building, and the desire to render these structures fire-proof, led to the extension of the arch principle to the covering of ALL openings, and the ceiling of ALL areas, and from that moment architecture took a new turn. From the *invention of the arch* till the *rejection of the beam* (a period of about fifteen centuries), every change had been for the worse; the whole history of the art was *debasement*, from the progressive loss of constructive consistency. *The beam was rejected*, (at least in north-western Europe,) and immediately all was *purification* and rapid return to unity.

The forms derived from Greece, but by this time so decrepit as to retain little vestige of their original beauty, were now gradually abandoned, and every thing old (except first principles) sacrificed to the new idea; and so rapid was the progress, that by the year 1250 in Germany, and by 1300 in England, the unity of the new system was established: and now let us see in what consisted this unity.

The second system of statical design consisted in the complete avoidance of *cross-strain*, and in the subjecting of the materials throughout the whole of the visible construction to forces of *compression alone*. It may therefore perhaps be best termed the *Compressile System*. In order to effect this, the pressures can no longer be every where vertical; and as it is a most important point in construction that the continuous joints, or beds, should be as nearly as possible perpendicular to the pressures acting on them, these joints are no longer universally horizontal, but inclined in various directions, and should have been so to a greater extent than the Gothicists practised. Indeed, there would be much room for the improvement of that system by the introduction both of modern science and of a larger portion of Greek taste (of which it nevertheless re-

tained a good deal in its best productions).* But imperfectly as the Gothic aim was carried out in construction, and often also in decoration, it was completely accomplished in statical design, *i. e.* throughout the *visible* construction there was no portion of matter subjected, as far as the eye could judge, to any other force than simple compression. When this is the case (and not otherwise) a building may be termed completely Gothic; being complete in its statical design. The geometrical design is another point, quite independent of this, and is reducible mainly to the correct positing and subordination of the five classes of forms mentioned in our last chapter; a principle *equally necessary in every style.* A building may be perfect in its statical design, while it is extremely faulty in the geometrical, as was the case with nearly all the buildings of Egypt.

The Gothicists, like the Greeks, employed a tensile construction in the roof framing, that being in both systems invisible either from the exterior or interior. Nor was this concealment any defect; for, as Ruskin has observed, "the architect is not *bound* to exhibit construction:" still less can he be bound to exhibit the *whole* of it, to do what nature has never done. He may conceal as much as he likes, but may not *disguise* any. None need appear, but that which *does* appear must be *true.*

After its culmination, the Gothic system gradually declined, from the progress of a variety of falsehoods, of which some were general to the whole of the countries in which it flourished; others confined to France or Germany, or England or the Netherlands. It is not the place to enumerate them here, but to observe that one of the chief causes, especially in England, was the superseding of stone by timber in many parts, particularly ceilings, and the consequent extension of the style of construction best adapted to this

* Of course I do not mean Greek *forms*, the emancipation from which had been an essential part of the formation of the new system.

material, which is the third style already twice alluded to, viz. the *tensile*.

In the compressile system all apertures and spaces were covered on the arch principle, and the oblique pressures thus occasioned were transmitted down to the ground by masses of material called *buttresses* or *abutments*. But this is not the most economical mode of treating the said pressures when we have materials of great length and strong *in tension*, as timber and iron. The more obvious and less wasteful mode is tying the two feet of the arch together by a bar of one of these materials, thereby counteracting the horizontal portion of the oblique pressures, and leaving only their vertical portion to press on the two supports, as the original beam or lintel of the first style did, and render all buttressing from without unnecessary. Instead of the arch, an arrangement of two or more bars or timbers may be substituted, and thus arise the various kinds of *truss*, whose perfection consists in having no part subjected to cross-strain, but every part either to direct compression or direct tension.

This third constructive system combines, in a certain degree, the advantages, and avoids the defects, of both the others: for all its *active* pressures are vertical, as in the *first* style; and yet it avoids all cross-strain, like the *second*. It saves all the waste of material (not conducive to strength) in the *lintels* of the former style, and, also, *all* the material of the *buttresses* in the latter.

But, though there are three styles of construction, there have been only two systems of architecture,—only two styles possessing *constructive unity*, the Greek and the Gothic. The third constructive principle has yet to be elaborated into a system. The two systems are past and dead; we may admire the fading vestiges of their loveliness, but can *never* revive them. The third is the destined architecture of the future.

CHAPTER V.

APPLICATION OF THE FOREGOING PRINCIPLES TO TRABEATED OR BEAMED BUILDING BY THE GRECIAN ARCHITECTS.

"It seems that the truth of imitation, which was formerly the exclusive privilege of the Greeks, and has been transmitted to us by them,—that this imitative truth, to which we are now familiarized, and which we regard with the indifference of habit, was one of those fruits whose development should be considered rather as a prodigy than as a necessary effect of the natural order of things."—Q. DE QUINCY, *On Egyptian Architecture.*

THOUGH the first style of construction was the most unscientific and wasteful both of material and of space, yet did it produce the most durable buildings, and also the most grand and noble artistic effects. The durability arose partly from the great masses employed, because it required long and strong lintels to span the openings, and allow those openings to be as wide as possible; and thus a correspondent size and massiveness of stones was needed throughout. It also arose from the absence of oblique pressures, whereby every stone became independent of those above or beside it for support, so that no dilapidation of the upper parts could (as in arched buildings) endanger any thing beneath. To these reasons may be added the exact perpendicularity of every pressure to the bed (or horizontal joint) receiving it,—an excellence that can never be *perfectly* attained in the inclined beds of arched buildings, however exact may be the calculations of the

engineer; and, indeed, is never attempted. Lastly, the ambitious nations who best practised this mode of building, gave it a great excess of solidity, calculated to withstand even earthquakes, and not without success.

The unrivalled grandeur and majesty attainable by the same style of construction, when properly treated, arose partly from this same excess of solidity; partly from the bold projections rendered possible by the largeness of the stones; partly from the sublime *repose* of a structure whose pressures are *all vertical*, no side-thrusting, no action; but *chiefly* from the *rectangularity* of the openings or principal divisions, rendering possible the most perfect subordination of the other classes of form, or the omission (or reduction to any extent) of the lighter classes, and the use of the grave classes in minor details, without danger of violating the principles explained in Chapter III., by rendering details graver than principal divisions.

In the practice of this system by the Egyptians, there was perfect constructive unity, not only in the *visible*, but in the *whole* construction; all of which indeed was seen, for (the almost rainless climate rendering pent-roofs unnecessary) the only covering was a flat stone ceiling. But this absence of hidden construction was no merit (being, in fact, unnatural), and whatever other merits the Egyptian works had were counteracted by two grievous faults, — *inattention to the subordination of the five classes of forms*, and complexity, or *utter absence of unity in the general design*, even of temples, the fabrics, of all others, requiring the most of that unity.

The unity of statical design, then, in the Greek structures, was nothing new or peculiar to them. Their excellence consisted in the addition to this of the two principles above mentioned; and of these we will consider, first, the unity of general design.

The feeling which led to the use of the gravest class of form, in all principal arrangements, having decided the general plan to be rectangular, it might at first be thought that a

square would embody the most perfect idea of unity; and there are not wanting examples of this plan in the nave of temples without peristyles, as in the great temple of Ceres, at Eleusis, and the very small Ionic one existing in Stuart's time, on the Ilyssus, the cell of which was a perfect cube.* But when that beautiful and sublime change was made, of carrying the colonnade entirely round, making all the sides alike in character, all equally ornate, all equally impossible to appear flat and blockish, even at the distance of miles,—then the squareness of general plan was invariably given up for an oblong at least twice as long as its breadth, generally somewhat more. What was the reason for this? A square peripteral building would have led to a doubt, on approaching it, which of the two visible sides was the entrance front. Unless both were alike, (as in the Villa Capra, at Vicenza, copied at Chiswick House,) the fourfold symmetry would be sacrificed; but if both were alike, both must be entrances, or appear to be so (as in the graceful work of Palladio, above mentioned). Now the appearance of only *one* entrance, and the instant discovery thereof, was evidently a most important part in that unmatched expression of unity at which the Greeks aimed, and alone, of all the nations in the world, attained. Though there were often two entrances, being placed at each end, only *one* was visible in any possible view of the building. But this was not enough; the distinct statement that there was no entrance in the side, required that (when it had a colonnade) there should be a column in its centre, consequently an *odd* number of them; while the entrance front required an opening in the centre, and therefore an *even* number of columns. Now, if the difference had been made small, (eight columns in front, and nine in flank, for instance,) the whole, if not square, would have appeared as though intended to be square; and if really square, the closer

* Symbolic of perfection, as we see by Scriptural texts,—1 Kings vi. 20; Rev. xxi. 16. In all the measurements of the temple no cube occurs but that of the "most holy place."

placing of the columns on one side than the other, would have destroyed all the perfection and symmetry of that form; and, in either case, the idea conveyed would be that of a blundering attempt at squareness. Abandoning this form, therefore, the architects adopted as their fundamental form the next most perfect (or regular) rectangle, viz. a *double square*.

That every temple (except that piece of barbaric pomp at Palmyra) should present its *narrower* face as the front, is referred by Papworth* to the avoiding all approach to *show*, or displaying itself to the best advantage,—a very noble idea, and one which doubtless operated both with the Greeks and their nearest followers, the Gothicists. But it may be observed, that there is a less refined reason, which has led all nations (probably, without exception,) to make the axis of symmetry in their temples *longitudinal*, and in their palaces *transverse;* the temple being always entered from its end, and the palace from its side. The latter being divided into many apartments requires the entrance in that place which will most readily communicate with them all, *i. e.* as near the centre as possible; but the temple being a single room will have the best effect when the eye on entering can embrace the largest portion of it at once, for it is impossible ever to see the whole interior even from a corner, because the eye cannot receive distinct impressions over a circle of the retina more than 45°, or at the utmost 60°, in diameter. Now by taking two lines fixed at this angle, a folding rule, for instance, and laying it on the plan of any room, you will find, by moving it about, that position in which they include the greatest portion of the area; and it will be found that the more an oblong room deviates from the square, the more of it can you thus see at once; and that when the room is a double square, or longer, the best position for the point of view is the centre of an end; and the *worst* is the centre of a side, (in which

* In the excellent Essay on Grecian Architecture, prefixed to his edition of Sir W. Chambers, to which I owe much assistance in this inquiry.

place the great temple at Palmyra is entered.) The general use of the former place, therefore, in ancient (as well as Gothic) temples, is a sacrifice of external show to internal effect.

It may here be remarked, that the nave of the Greek temples was not that gloomy naked cell that some imagine; neither was it confined to the priests, but open to all. To Fergusson is due the merit of first elucidating how it was roofed and lighted. His theory bears internal evidence of its truth, being the most perfect mode of lighting ever employed, viz. by what we call in England a clerestory, but *without any other windows below*. There is an example of it at St. Geneviève, Paris. The Greek clerestory did not rise above, or in any way break, the simple out-planes of the roof, while it varied their otherwise too monotonous surface. The notion that most Greek temples were open courts, or (to use this writer's words) "a sham temple," "a colonnade and dead wall surrounding nothing," is beneath notice.

But with all the precautions for external unity, it would still have been imperfect but for the *one* crowning, all-including feature—the roof, with its *one* ridge and *one* pediment (only one being possibly visible at once). On this point, Papworth observes,—

"Towards obtaining this unity of effect and character, the combining quality of the roof is obviously necessary in the Greek temple; it combines in one span the cell, the portico, and the peristyle, without which they would be viewed as parts merely, and to which the steps, or base supporting the whole, greatly contribute.

"To complete this unity of effect, only one approach was obvious under any view of the building; indeed, so carefully was this principle attended to, that on the flanks of the edifice the spaces were arranged in even numbers, so that a column was placed in the middle of its length, and not an intercolumniation, while the actual approach was always decidedly indicated by a central opening in the portico, and by the centre-marking character of the pediment."

The *base* above alluded to was always (in the pure Greek or Doric style) equal in height to about a diameter of the columns, and the architrave was the same; otherwise these two principal parts would have seemed inadequate to bear the pressures of those columns, concentrated on distinct points of their length. The base was, moreover, for convenience subdivided into *three* equal steps and no more; for, had the steps been much lower than a third of a diameter, they would have seemed thin paper-like layers, quite out of place below those weighty masses. Neither could a Grecian eye have tolerated the breaking of these continuous lines by the introduction of smaller steps or mounting-blocks opposite the entrance or elsewhere. They preferred the inconvenience of ascending steps, 15, 20, and even 25 inches high; and unless we can submit to this inconvenience, all attempt to copy a Grecian portico will be an absurd caricature.

In all great and complete buildings, of whatever style, the basement, even to a considerable height, consists wholly of *horizontal* lines, running *without any interruption*, rise or fall, round the entire structure. Salisbury and Milan cathedrals are the grand examples, but it is seen in all smaller Gothic works if pure, and completed on one design. The peculiarity, therefore, of the Greek basement was not the unbroken *horizontality* of its lines, but their unbroken *plan*—straight from corner to corner.

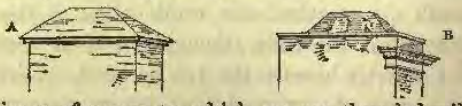
In the Grecian design, up to the roof, we find all principal members and lines horizontal, and all secondary ones vertical,—a consequence of constructive truth; the vertical-pressure construction requiring all continuous joints to be horizontal, and all discontinuous ones vertical.

This truth also required the continuation of the cornice horizontally across the ends, (though not there necessary to throw off the wet,) because the two inclined cornices above would have given the expression of oblique pressure, unless tied together into one triangle by this feature. By this

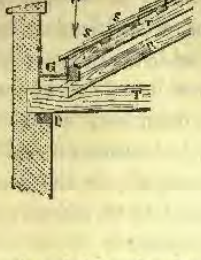
means the construction of the roof, though not possible to be displayed, was *truly indicated* externally. Moreover, a support was afforded for the glorious ornaments in the pediments, which gave life to the whole.

In descending from the general design to that of the parts, we find every where (in the Doric order) the principle of *contrast* carried to the utmost extreme; the opposite one of *gradation* being as nearly as possible excluded. I am convinced that if we really understood this principle of *contrast*, and determined to embody it *alone* without compromise, in a vertical-pressure building, we should be led to the complete Doric order, though we had never seen it.

To begin with the most indispensable feature of Greek buildings, the *cornice*, (for columns and architraves were not of universal use,) we must observe that in all countries where it rains at all (even in Egypt) this feature springs out of an absolute constructive necessity; for it is impossible completely and durably to exclude wet at the junction of the roof and walls, but by making the ROOF plane advance beyond and cover this junction. (Fig. A.) It is obvious to a child that this must effect the object at once. But as in China it is necessary that women should not walk, and in Japan that teeth should be black; so it is necessary in England that this natural arrangement of roof and wall should be reversed, that the roof should be rather less than sufficient to cover the building, and the WALL raised to conceal the junction. Of course, this requires a great waste of expense in misconstruction, or rather patching, to keep out the wet from season to season; but on this, trades are said to depend; and, of course, the original falsehood has to be concealed, disguised, and palliated by lie upon lie. (Fig. B.)



The tissue of errors to which we are thus led will appear more clearly by the following comparison.



Junction of the roof and wall in an English building.

P, The wall-plate. T, The tie-beam.

R, A principal rafter.

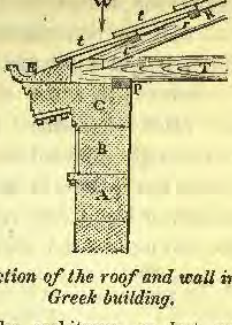
r, One of the minor rafters not tied by the feet but thrusting outwards, and having to be supported by the pole-plate and a purlin (not seen) which, concentrating the whole weight *on one point* of the principal rafter R, calls for unnecessary strength therein. Above *r* is seen a *fourth* set of supports, the *first* of which four sets would have sufficed if properly distributed, since it supports all the others besides the covering.

ss, The slates or tiles made so short as by their overlapping to become much less inclined than the general plane of the roof, and thus call for unnecessary height therein.

C, The parapet or roof-hider, built chiefly on rotting wood.

G, The lead gutter, capable of overflowing or leaking *only within* the building, and immediately over the chief timbers.

W, The whole weight of the roof concentrated on a point far *within* the walls, deflecting the tie-beam and thereby thrusting the wall outward.



Junction of the roof and wall in a Greek building.

A, The architrave, or last wall-course but two.

B, The frieze.

C, The cornice or salient course.

P, The wall-plate. T, The tie-beam.

R, A principal rafter.

rr, Minor horizontal rafters or purlins, numerous enough to distribute their weight *equally* throughout the length of the principal rafter R, and immediately receiving the covering.

tt, The tiles, or marble slates, in either case made long enough to have nearly as much inclination as the rafter R.

E, The epitithedas (oversetting) or stone gutter, *entirely without* the building, and the inner brim of which, being higher than the outer, prevented the *possibility* of an overflow wetting the timbers.

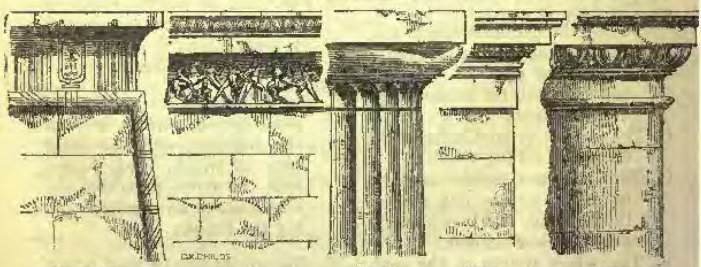
W, The weight of the roof acting on the exact *centre* of the wall's thickness, *steadying* and not *thrusting* it, and not deflecting the tie-beam.

But the intense ugliness of buildings without apparent covers, or with covers just too small, and slipping down

within,* of course leads to the necessity of a sham cornice, a huge construction of lath (or other pendent contrivances) and plaster, the burden of which, pulling on the thin outer screens, is supposed further beneficial to trade. This piece of scenery is sometimes continued all round, but generally confined to a side or two, and returns round the angle a few inches, in order to give the spectator the double pleasure of being deceived when so placed as to see only one side, and undeceived when he turns the corner.†

* The *parapet* fashion is derived from the Gothic system, in which this feature was neither a deception, nor did it lead to faulty construction; for the walls of churches thus finished were at least *two feet* thick, allowing room for a gutter in the centre, between two little walls, of which the outer constitutes the parapet, and the inner (often nearly or quite as high) receives the foot of the roofing; *all the timbers* of which are thus raised *above* the level of the gutter and its outlets, and thus perfectly safe from wet. Dr. Möller first noticed this excellent contrivance in the minster of Freyburg; it is the same at Winchester and other English buildings. But if we want to adopt the principle on the *thin* walls of modern shells, of course we have no means but by overhanging outwardly like the Grecian cornice.

THE FRIEZE OR NECKING TRACED FRO

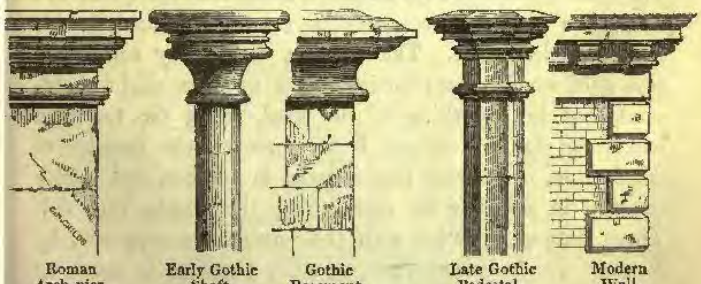


Egyptian Wall. Greek Wall. Greek Column. Greek Anta. Roman Column.

† It is curious to trace the progress of the taste for deception. When sham cornices were first introduced, about a century ago, they never mitred round the corner, but honestly stopped just before arriving there.

Below the cornice of the Greek building we always find a band called the frieze; and below the projections which crown the columns, the antæ, and every other principal member, we recognize the same peculiarity; each has its frieze or necking, the division between it and the mass below being differently marked in each case, but always by a line of shadow. In the *general* necking of the building (at least of a temple) this line of shadow is cast by the projecting fillet called the *tænia;* in *antæ*, and the basements of some tombs, it arises from a general *overhanging* of the frieze before the plane below; and in *columns*, and the basement of Lysicrates' monument, it is formed by a *groove*, the direct reverse of the first method, but agreeing with it in the production of a line of shadow. This peculiar *echo* of the main shadow, by a smaller one beneath it, seems to have been first faintly developed in Egypt, seized upon and (like every thing they touched) perfected by the Greeks, and to have descended by tradition for 3000 years, through all the vicissitudes of Roman, Romanesque, Gothic, and post-Gothic fashions to our own day.

EGYPTIAN INTO MODERN ARCHITECTURE.



A hundred generations of men have now admired this peculiarity,—have felt that it could not be omitted without deterioration of beauty. Why is this?

Let us hazard a conjecture. We have said that there can

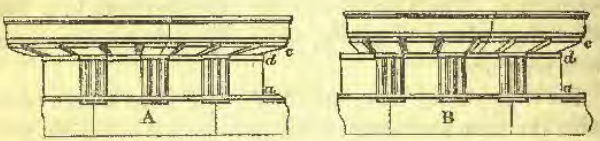
be no contrast between two things totally dissimilar. Consequently, there can be none between two such things as a cornice or capital, and the wall or mass below it. They have no point in common. Now, if we can introduce between the two, something that shall have a resemblance to the cornice in one respect, and a resemblance to the wall or mass below in another respect, it may form a contrast with each. This can be done by cutting off (by a line), from the general mass, a portion about equal in height to the capping, or the mass of shadow cast by it. This will resemble the dark band above in *size*, but contrast with it in *luminosity:* it will resemble the mass beneath in *position* and *luminosity*, but contrast with it in *size;* and thereby increase its apparent height, which, I think, any one must perceive a frieze or necking to do.

In Egypt, the frieze and cornice formed one concave sweep, (though the intense sunshine of that climate casts the shadow of the latter in such a way as to form a sharp contrast of a dark and light band nearly equal.) But the Greeks, aiming at the most unmitigated contrast, thought the curved surface too light a form for the severe sublimity, which was their object. They, therefore, made the *soffite* and the *frieze* two distinct planes, meeting (at first, probably,) with a right-angled nook. The *mutules*, fancied by some into copies of wooden construction, have not the slightest resemblance to any thing of the kind, being far too thin and broad for any rafters' feet; moreover, the practice of falsification, or copying one material in another, was totally opposed in principle to every thing the Greeks ever did. These features, together with their *drops*, are supposed, by Papworth, to be intended among other purposes to break up and confuse the edge of the shadow cast down on the frieze, which edge, if straight, would most harshly cut the sculptures thereon by a sharp line, besides appearing like an architectural division, which, varying in place with the time of day, could not always be pleasing; and "that principle

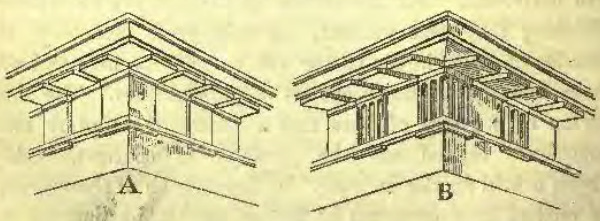
in architecture would be violated which prevents the projected shadows from disturbing the adjusted proportions." The triple tiers of drops, it may be observed, so situated as to be *always* seen in perspective, present the only ornament consistent with severe simplicity; owing all its beauty to regular repetition of similar objects, without any beauty of form in the objects themselves, or any introduction of the principle of *gradation*, except that unavoidably produced by perspective. The idea of such an ornament may have been taken from plants in a field, uniformly arranged for agricultural economy.

The triglyphs are now generally thought to have been (as regards the mere idea) derived from the clusters of upright reeds alternating with ciphers or monograms on the Egyptian frieze-cornice. But it seems to me that the mere aim at contrast and severe simplicity is quite sufficient to have rendered them necessary. The mass of horizontal lines in the entablature required to be contrasted by vertical ones, and the frieze was the only place admitting them, the cutting of the *architrave* vertically being such an obvious falsehood as not to be entertained for a moment, while the chief plane of the *cornice* was horizontal. But the vertical lines could not be repeated all along the frieze without, not only great monotony, but positive physical injury to the eye, as any one may find who looks intently at a numerous set of parallel lines. The alternation of a group of lines and a square of sculpture more completely carried out the principle of contrast, besides giving a field for the sculptor. In Egypt, each of these groups of vertical lines consisted of five or six hemi-cylinders; but the Greeks confined it to the smallest number of repetitions that could exhibit equal-spacing, namely, *three*,—and, instead of the soft rounded hemi-cylinders, they adopted the graver form of *octagonal prisms;* obliquity (but not curvature) being admitted in these minor features, rather to enhance the severe rectangularity of principal parts, than from a childish search after variety.

The two planes of the frieze and the soffite being thus each crossed by transverse lines, it became an object that these two systems of lines should make the most *intensely* rectangular contrast with each other, not really—but *visually:* for this purpose the real angle between them was diminished to less than a right angle, by making the soffite slope forward, which has the effect intended in whatever way viewed, as will be seen by the following sketches.



A represents a Doric entablature, with the soffite sloping over in the usual manner, in which it will be seen that all the angles *a d c*, &c. appear, in consequence of the perspective, more nearly right angles, *i. e.* more abruptly *contrasted* than the corresponding angles in fig. B, which shows the appearance of a horizontal soffite. This effect will be equally true in an angular view, as seen in the two figures below. (A horizontal,—B inclined soffite.)



We must here, again, protest against that insolent libel on the Greek architects, the *wooden* theory of Vitruvius and Milizia, who, of all writers on architecture or building, perhaps give the fewest hints at general principles. In the case of the inclination of the soffite, this barbarous theory is at once disproved by two facts, the inclination being observed on the *fronts* equally with the sides

of the building, and its angle being wholly independent of that of the *roof*. To aid the effect, the frieze was made to incline imperceptibly backward, and the architrave also, because any want of parallelism between them would have become obvious at the corners.

The architrave being evidently the most important constructive member in this style, we need not comment on the perfect fitness of the severe uncompromising plainness, strength-expressing squareness, and majestic breadth of light and shade, on its face and soffite. The only approach to decoration* appears at its very top, and so connected with that of the frieze, as evidently to be intended only to reconcile the abrupt difference (not contrast, but *contradiction*) otherwise occurring between the completely ornate and completely plain member. The decoration is applied under each triglyph, because the same number and quantity of horizontal lines that suffice to support and bound the metope sculpture would not suffice to *stop* and contrast these groups of strong vertical lines. The principle is exactly that which led the Italians, whenever they had a string-course serving as sill to a tier of windows, always to attach *something*, it hardly matters what, under each window or each window-jamb. The sub-triglyphs are simply repetitions (with less projection) of the mutules; and this repetition serves more than any thing else, except the *cap and necking* repetition, to give unity of style.

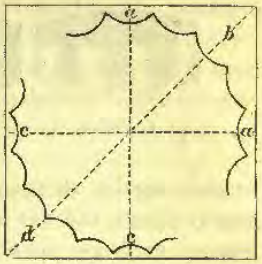
Descending to the column, we must observe that the profile obtained, as already explained by the generalized imitation of limbs, though perfectly proper for the support of a plane extending in *every* direction from the capital, (as a flat ceiling,) requires an addition to fit it for placing under a beam that extends on only *two* sides of it. Unless the architrave were

* The shields and other metallic objects *attached* to the architrave of the Parthenon, being not *a part of it*, did not interfere with its nobly severe expression.

as wide as the *echinus* (which would render the whole top-heavy), it would not press on the *whole* of that member which is essential to preserve the analogy with an animal extremity. The *abacus* then presents the simplest possible way of spreading this pressure over the whole capital, and its thickness is regulated by what is found by experience just to give the expression of sufficiency to this purpose. If too thin, it is apparently useless, and if too thick, unnecessarily massive.

The shaft, as already noticed, though required by convenience to be *round*, is, nevertheless, made to present *square* (right-angled) edges. Nothing could be so contradictory in principle, to every thing else in the Doric order, as the sleek *fatness* of a completely rounded shaft, whose mass only gives it clumsiness without the slightest expression of power. A Dorian entirely debarred from the use of flutings would have made his columns square, at whatever sacrifice of convenience. The first improvement on the square would be by truncating its angles, to reduce it first to an octangular, and then to a 16-sided prism. But the contrast between two successive sides of this being very slight, and liable to be counteracted by the faintest weather-stain, this contrast was exaggerated to the utmost, by so hollowing out each face as to reduce the arris to a right angle. The same thing was done for the same reason by the Gothicists in many of their octagonal features (see ninth example in the parallel of neckings in p. 145). There is only one case, however, of the 16-sided shaft,—that bold example crowning the promontory of Sunium (Cape Colonna), evidently designed for distant view. Every where else we find the sides increased to twenty, on account of the common-sense principle which requires that in every structure, as solids should be over solids, and voids over voids, so should projections be over projections, and recesses over recesses. Let the square in the annexed figure be the plan of the abacus, and *a b a*, part of that of a 16-fluted shaft. If a recess be placed as at *a a*, beneath the most re-

ceding parts of the abacus, (or those nearest the axis,) then a recess also, as at *b*, will come under its most prominent point. But by increasing the flutes to twenty, one can be placed centrally under each face of the abacus, as at *c c*, and an arris (or greatest projection) at *d*, under the angle of that member. This could not have been obtained with any other number of flutes, between twelve and twenty-eight, of which the former might probably be used with advantage in bold plain engineering works, but the latter would introduce too much of the principle of gradation, in the *seven* gradually diminishing quantities, from the visual middle of the column to its visual side.



It might be thought that contrast would be better consulted by making every recess or flute, a pair of planes meeting in a nook, as if the plan consisted of five superposed squares (as practised in some Egyptian works with a smaller number); but not only would this introduce unnecessary complexity by doubling the number of lines, but by drawing the outline elevation of such a column, we shall find, in going from the centre to the side, a breach of continuity—a sudden change in the law of gradation, at that recess where we first lose sight of the nook-line. Though gradation was to be avoided, it was felt that wherever it did unavoidably occur, it should be continuous. A sudden breach in *any* gradation is ugliness, because it is neither regularity nor irregularity. It is the same principle on which we condemn the sudden change of curvature in the Tudor arch, and any change from one curve into another, except the perfectly contrasted flexure, as noticed in Chapter II.

There are obviously only three *simple* modes of striating columns,—by convexities alone (*reeding*)—by concavities alone

(*Doric fluting*), and by alternate concavities and convexities (*scalloping*). The last is the mode most common in nature,

Scalloping. Reeding. Doric Fluting.

because regular striation is here confined to *elegant* (not *grand*) objects, and this is abstractedly the most elegant kind, being all gradation and no contrast. Of the other two modes, the Doric affords most contrast for several reasons. First, all its lines (which are the only places where contrast of light and shade can occur) are visible,—while in the reeded column, only a few of the nook-lines can be seen at once. Next, only two of these nooks in the reeded example can so receive the sun as to have one side shaded and yet the other not shadowed by it, as at *a b*. In the nook *c*, both sides receive light, though not equally; and in *d*, one casts its shadow on the other: now the edge of a cast shadow can never have the sharpness of contrast that an actual edge of a body has. Moreover, in concave surfaces, as already remarked, the cast shadow of the edge often (in sunshine) reduces great part of the concavity to equable shade, and thus obviates part of the gradation that is unavoidable on convexities.

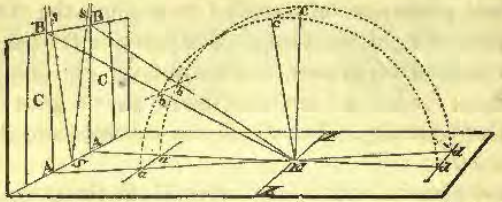
The angular plan of the column ceases at the top of the shaft, because its continuation throughout the swell, or echinus, would introduce too many curved lines. It would be more elegant than the present capital, but less fit in a composition of which grand severity (not elegance) was the aim, and in which the curves were made as few as would just suffice to give greater value to the general rectangularity. The long fluting lines, then, being stopped suddenly, the same principle that called for the sub-triglyph, required here the contrast of strong and repeated horizontal lines. *One*

was not sufficient to stop such long and strong lines as the arrises; so *three, four,* or *five* of these stopping lines (*annulets*) were made, according to the height of the column, and their profile carefully studied to produce the strongest alternation of light and shade. The Pæstans trusted to intensity instead of number, and substituted *one* deep black hollow, but the leaves introduced therein show a great decline from Doric severity. Indeed, all the colonial examples are very impure.

The *diminution* and *entasis,* essential to the character of limb-columns, do not, as might be thought, interfere with the severe rectangularity of the style, but actually increase it when seen from a near point of view. To explain this, we must remember that the ocular images of objects are formed on the retina, which is not a plane but a *spherical* surface, and the most severely contrasted angle is not always an actual right angle, nor yet that which appears most so in perspective, but that whose image on the retina is most right-angled. Every designer should understand *spherical perspective, i. e.* projection on a spherical surface of which the eye is the centre. It is by no means a difficult subject, perhaps easier than ordinary perspective; and the architect would do well to consider (as the Greeks did) not only the elevation, and the effects in plane perspective, but especially the spherical projections of any thing, for those alone are really its *visual* appearances.

Now, when we examine a colonnade, arcade, or any similar alternation of masses and voids, we never place ourselves opposite a mass or projection, (column, pier, or buttress,) but always opposite a recess, (intercolumn, arch, or window.) The visual outline of the column, then, is less important than that of the intercolumn. Every one must have observed, when opposite a Doric intercolumn, at a distance about equal to its height, or rather more, the *intense squareness* of its effect. This is because its ocular image is *more* rectangular than if the opening were actually rectangular, like a door-

way. Let E, in the following figure, be the place of the eye in a horizontal plane, X X; and let the vertical plane A C, A C contain the geometrical *elevations* of two columns, C C.



If the sides of the intercolumn (or A B, A B) were vertical, they would be projected in spherical perspective as two portions of *great circles** meeting in the spectator's zenith. Consequently, the image of the opening would diminish upward, like a piece of one of the gores of a globe; and its top, B B, being projected, also, as a portion of a great circle, would make an *obtuse* angle with each of the sides. But let it be required to make the ocular image as seen from E, parallel-sided and rectangular. The sides of this image will then be parts of the two parallel circles, *a b c d*, *a b c d*. The rays drawn from E through every point of these two circles will form two very obtuse cones, whose common vertex is at E, and their common axis X X; and the vertical plane C C (being parallel with their axis) will so cut these two cones as to form the two hyperbolas A B, A B, which will be the form that must be given to the lines that are to *appear* parallel, as seen from E. To give the opening, therefore, the utmost effect of rectangularity, (as seen from this distance,) the sides of the columns must be a pair of opposite hyperbolas, having their common centre at S, and their asymptotes, S *s*, S *s*, making the same angle as E *c*, E *c*, consequently the same as A E A; or the angle which the breadth of the intercolumn subtends from the distance chosen, which distance will vary greatly of course in different designs, but can never be less than the height of the order, because the

* Every straight line becomes in this projection a portion of a great circle.

eye cannot see the whole of an object at once that subtends more than 45°.

Whether this were the exact curve given to the entasis, I have no means of ascertaining; but this seems the only reason that will assign any particular curve. With regard to its dependence on a certain chosen distance of sight, it must be observed that, nearer than this, we can only see details, and hardly take in a whole column or intercolumn; while, at all greater distances, we take in *several* such divisions, and estimate their form rather by the *axes* than the *outlines* of the columns, so that their limb-like form does not interfere with the rectangular nature of the principal divisions.* The thought and provision bestowed by the Doric architects on the effect at *every* possible distance (from miles down to inches, from their work) is most remarkable.

The *optical corrections* are another most admirable refinement peculiar to the architecture of the Greeks. The entasis may perhaps be regarded as one of these, since a column made with straight sides (*i. e.* conical) appears from a near point of view to have *concave* sides, as any one may observe in the portico of Covent Garden Theatre. This effect does

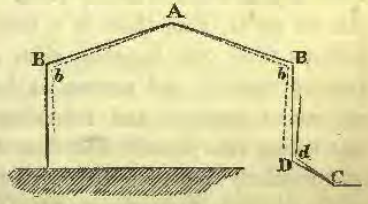
* Few things in modern Grecian caricatures are uglier than the upward expansion in the width of a colonnade of some length, as the longest one in the front of the British Museum. The columns being set with their axes upright, their inner sides lean away from the wall, and (when viewed from one end of the avenue) appear falling. This effect cannot happen with a *short* portico, whose length does not much exceed its height, because the opening at the further end, (like those mentioned above,) though not rectangular, will appear so. But the further it is removed, the less correction of this kind will it receive, so that the longer the colonnade, the more should the axes of the columns lean inward, though they never need lean so much as to make the inner sides quite vertical. We should therefore observe this proportion. The width of the passage at the floor : that at the ceiling, : : its length : the diagonal formed by that length, and the height from the eye to the ceiling. This rule would make the inward inclination of the columns on the *flank*, of a temple, greater than on the *front*; which the latest measurements, I believe, have shown to be the case.

not require the presence of more than one column, (so that it cannot depend on the intercolumn,) and it disappears beyond a moderate distance. It is explained perfectly by the fact that when the eye is directed to the middle of the column's height, (which it must be to see the whole,) the upper and lower parts being, the one more distant, and the other nearer, than the part to which the eye has adjusted itself; they will both produce on the retina, indistinct images, out of focus, and therefore too wide. The effect may be perfectly imitated with a model of the eye, or a camera-obscura. But the entasis in Greek columns is commonly *more* than sufficient to correct this illusion, and so we should expect both from the treatment of the intercolumn above explained, and from the generalized imitation of natural columns.

But the most general source of the illusions to which these corrections were applied, was *irradiation*, or the spreading of luminous impressions on the retina. It is this which makes the angular column of a portico, seen against the sky, appear narrower (unless made broader) than the others seen against a ground darker than themselves. In each case, the lighter image encroaches on the limits of the darker,—the sky on the dark column,—the light columns on their back-ground. As this fact (perfectly established in optics) is strangely disputed by some architects, we subjoin a figure that will furnish an experimental illustration. Let the reader, from the distance of a yard, estimate the relative widths of the two ends of this rectangle, and then measure them. The drops under the tænia, if made cylindrical, will appear to taper downwards, from their tops being seen against the shadow of the fillet above, and their lower ends against the bright surface. To correct this, they are made slightly conical in the contrary direction. So, also, columns with vertical sides seen against a wall, the upper parts of which are shaded more than the

lower, (as always happens behind a colonnade,) will appear to taper downwards; and to correct this, seems the only object in the slight and hardly perceptible upward diminution given to antæ, and perhaps that of columns in the lighter orders, which are not imitated from the animal type.

Some other corrections may be called rather *æsthetic* than *optical*, being directed against illusions of *perception* rather than sense; many of which may be traced to the well-known effect of *contrast*, always to make the difference between the things contrasted appear greater than it really is. Red and green placed together, appear redder and greener towards their junction than at a distance therefrom; and this I hold to be applicable to all contrasts of whatever kind.* Thus, *angles* being contrasts, the difference of direction between their two lines will seem greater than it really is; and hence, except in the case of a right angle, (where this difference is a maximum,) it will be increased; *i. e.* every oblique angle must appear less oblique than it is; an acute angle being apparently increased, and an obtuse angle diminished. To this I attribute the fact, that the general outline of a portico, with all the axes of its columns vertical, seems *broader at the top*,—an effect not, I believe, observable when there is no pediment. In the outline, we have three obtuse angles, A B B, each of which being apparently diminished, (as by the dotted lines at *b b*,) all will evidently conspire to make the sides appear to overhang, and the effect will be further increased when the outline is connected with the ground-line, not by a right angle but by two obtuse ones, as at D C,



* It is very obvious in contrasted *dimensions*. Whenever they are not greatly different, (those of the fasciæ of an architrave, for instance,) we shall on measurement always find that we have *over*-estimated the difference.

(which often occurs from a flight of thin modern steps, or from perspective lines of stylobates, &c.) The mere diminution of the corner column is not sufficient to counteract this effect, at least not in the case of the lighter orders, where the diminution is so much less than in the Doric; and hence the axis of the column should be inclined, and, to equalize the spaces between the capitals, of course the axes of all the columns must have a general upward convergence. This agrees with the result of the latest admeasurements.

The three antique 'orders' appear to have originated in different parts of the world; for, though all perfected by the European Greeks, only the Doric could properly be said to be their invention; the Corinthian being, as regards its most important feature, the capital, a refinement on that of Egypt; and the Ionic a decidedly Asiatic importation. Fergusson has observed that the *prot-Ionic*, or earliest approach to Ionic, is seen in the very ancient but slender columns, no less than thirteen diameters high, forming part of a palace at Persepolis, and, from their distance apart, evidently intended to bear only a timber architrave. If a portion of the upper capital, containing two volutes, were simply laid on its side, the general idea of the common Ionic capital would evidently result. In all Asiatic styles, also, there is a tendency towards lateral projections from two opposite sides of the capital, sometimes turning upward, and serving as brackets to the architrave; sometimes pendent, and reminding one of volutes, though not taking that form. The *base* is another Asiatic feature, and regularly increases, the further east we go, till in India it sometimes, with its innumerable moulded details, reaches to a height exceeding that of the shaft itself.

Prot-Ionic capital, Persepolis.

Before its adoption in Greece, the Ionic order was carried to considerable perfection in Asia Minor, in a form more

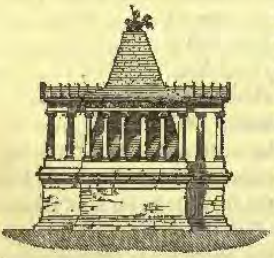
nearly approaching that now used, but greatly inferior to the Athenian improvement, which we have already briefly mentioned (p. 90), as arising from an accurate feeling for the subordination of the five classes of form which in the Asiatic examples were much misplaced. There is a fair specimen of these works in the fine tomb or monument whose remains fill the Lycian Room at the British Museum, and I think any one must be shocked at its want of an apparent architrave and at the huge block-like dentils, fit only for an engineering work, placed above so delicate an order. *These* features we admit to be relics of the barbarous Vitruvian hut-copying, known to be anciently practised in Asia Minor, but never in Greece.*

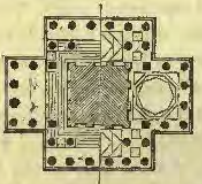
The immense temple of Ephesus, and others, hardly inferior, in most of the cities of that country, were Ionic; but the European Greeks, with their general accuracy of taste, confined this order to their smallest works, in which, sublimity being

* These remarks must not be misunderstood to apply to any thing beyond the *order;* the general form and arrangement of that and other Ionian tombs being above criticism, for their grace, lightness, variety, and cheerfulness, so opposite to the gloomy ugliness and sham massiveness, by Christians thought essential to every thing sepulchral. The most famous of these monuments, that of Mausolus, which has given a name to all pompous works of the kind, has unfortunately left no vestige; and the statement by Pliny, that it measured on the north and south 63 feet, but was shorter on the *fronts*, yet 411 feet in entire circuit, has made it a kind of problem to restorers. Supposing the *fronts* to be (as in all ancient buildings) east and west, it will be seen that the plan must have been either *eight-sided* or *cruciform*. The former would by its oblique angles exclude the use of the Ionic (the national and sepulchral) order. The expressions "attollitur in altitudinem XXV cubitis: cingitur columnis XXXVI * * supra pteron pyramis altitudine inferiorem [pyramidem] æquavit, XXIV gradibus in metæ cacumen se contrahens" seem to imply a basement 25 cubits high, then a colonnade, and above it a pyramid, equalling the height *of that below* [surrounded by the colonnade]. The finial was a quadriga, making the total height 140 feet, whence that of the basement and quadriga being deducted, would leave 80 or 90 for the order and pyramid, or about 40 for the order alone, whose columns, if Ionic, would be about 4 feet in diameter. The annexed arrangement shows

unattainable, elegance was substituted; and perceiving that the character of their national style would be entirely lost, without any equivalent, when the columns were reduced in thickness to less than a sixth of their height, (the proportion of a lion's leg,) they wisely rejected it in such buildings.

Of the exquisite curvilinear forms invented for the adornment of the Ionic order, none is more general, and yet less understood, than that called by them, *anthemion*, and by us, the honeysuckle, though it has not the slightest resemblance to that plant or any other, being no representation of any thing in nature, but simply the necessary result of the complete and systematic attempt to combine unity and variety by the principle of *gradation*. First, a 'line of beauty' was formed,—a line of contrary flexure, of our fifth class,—not of *contrasted* but *gradated* contrary flexure. On the principles explained in Chap. II., the unity and variety were further augmented by a gradated increase of breadth from one end of this line to the



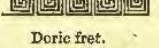


Plan looking down. Plan looking up.

how 36 of them, with a systyle spacing, could serve to cover the whole plan, by means of *trabeated domes*, (like that of the beautiful tomb at Mylassa,) resting outwardly on the columns, and inwardly on the sides of the pyramid. A hexastyle portico, 63 feet wide, would appear on each flank, and a tetrastyle one (with a pediment) on each front; and no beam would be required of greater span than 11 feet, that of the architraves being only 8 feet. A late restoration which challenges the "production of a better" has nearly all its architraves of 17 feet span, and forming the *only base* to a pyramid extending over the whole plan, (which has about double the area of that here given,) the most massive of all architectural forms being thus *hoisted in the air* on columns, and these of the Corinthian order!

other; then, a series of such lines were combined, not all alike, but gradated from the longest to the shortest. But as this did not produce a symmetrical or uniform figure, the uniformity of halves was obtained by joining two such series of lines in reversed positions: thus we have one of the tuft-like forms that compose the pattern. At first these tufts would be made all alike, but they would soon discover the graceful variety attained by using two such forms alternately, differing chiefly in their *number* of lines, but both composed in the above manner. As the lines, however, composing these figures are not long enough to afford an *extensive* display of gradated curvature, such as gives to spirals their exquisite grace, the artists could not forego the introduction of longer lines, in which the curvature (evanescent at their middle) increases up to each extremity so as to form curls or volutes; and these, associated with the above forms, complete the *anthemion* in all its varieties.*

Ionic anthemion.



Doric fret.

As a systematic attempt to embody as perfectly as possible, in a beamed building, the one principle of *contrast*, would lead any designers to the Doric order and nothing else; so the attempt, in an ornament, to embody *gradation* alone and unmixed, must lead to this precise combination of forms. The tracing of the solutions is easy after the problems have been solved. We can all make the egg stand, after Columbus.

The introduction of the anthemion into the Doric order was, in itself, a great abuse, but was palliated by certain changes made to diminish gradation and increase contrast, such as the omission of contrary flexure in the curves, (*i. e.* reducing them from the fifth class to the third,) the terminating them by angular instead of rounded ends, and the enclosing of each set

* Since arriving at this conclusion, I find Hay, in his 'Essay on Form,' has explained this ornament on similar principles, and rejected the notion that it is imitative.

of curves in the Gothic-arch-shaped border, crossing and violently contrasting with their direction. An ornament more fit for this order (but perhaps carrying the rectangular principle to excess) was that called the *fret*, which, it should be observed, was, anciently, never more than a *painted* form. It was left for the age and country of Soane to perpetuate such a thing in carved marble.*

What Sir J. Reynolds observes of his art, is applicable to every other.—"Such as suppose that the great style might happily be blended with the ornamental,—that the simple, grave, and majestic dignity of Raffaelle, could unite with the glow and bustle of a Paolo or a Tintoret,—are totally mistaken. The principles by which each is attained, are so contrary to each other, that they seem in my opinion incompatible, and as impossible to exist together, as that in the mind, the most sublime ideas and the lowest sensuality should at the same time be united."—(*Discourse* IV.) And he also remarks, "Some excellences bear to be united, and are improved by union; others are of a discordant nature, and the attempt to join them only produces a harsh jarring of incongruous principles. The attempt to unite contrary excellences (of form for instance)

* We must here warn the reader against a remarkable error of Ruskin. The value of ornaments in architecture depends *not in the slightest degree* on the *manual labour* they contain. If it did, the finest ornaments ever executed would be the stone chains that hang before certain Indian rock-temples. But the value of ornaments depends wholly on the amount of thought, of *mental labour*, embodied; and whether this be great or small, it is essential that it be *not exceeded* by the manual labour, for then the latter will appear thrown away. The Doric fret contains thought, but not enough to render it worth carving, perhaps hardly worth careful painting. But the Doric column and entablature contain such unexplored volumes of thought, that *no* material or finish is too fine for them. Though executed in polished porphyry, the head-work would outshine the handiwork.

It is far better that the thought be inadequately expressed, that the workmanship be not worthy of it, (as in foliage of edgeless cast iron, for instance,) than that the design be unworthy of the manual labour, as in Soane's carved frets.

in a single figure, can never escape degenerating into the monstrous, but by sinking into the insipid; by taking away its marked character, and weakening its expression."—(*Disc.* v.) Such was the attempt to produce a *Doric ornament* (a contradiction in terms); and the result, the rectangular fret, may well be considered (with all its varieties) the most monotonous and insipid thing ever used *as an ornament* by the ancients.

If we extend the term 'ornament' to the glorious sculptures that formed a necessary part of the Doric order, that filled its cell-frieze (in low relief), its metopes (in higher), and its pediments (in detached statuary), then we may well consider it by far the most ornate (or rather richest) order or style ever executed. The invention of a fit substitute for these, *i. e.* one that shall produce the same *architectural effect*, and harmonize with the rest of the composition, is the main problem to be solved in the adaptation of this grand style to those few modern purposes in which it may and ought to be employed.*

* Convinced that Greek architecture (being founded on nature and truth) can *never* lose its influence, never cease to be used (be it ever so useless), nor cease to be practised (be it ever so impracticable), we must find it a matter of some importance *how* it shall be imitated, whether used or abused, applied or misapplied. A few words on the more obvious and gross failures of our imitation, may not be here misplaced; especially regarding the substitute necessary for the Doric metopes and pediment-sculpture. In interiors and on northern fronts, I can see no objection to painting or inlaying, in the style of the ancient vases, the figures lighter than the ground, and varied by lines or drapery-folds, but with no attempt at deceptive shadowing. In fronts receiving the sun, however, this will not answer; great relief and *roughness* are there requisite to break up the otherwise straight shadow of the cornice. Where the figures are not phonetic, but mere patterns, it will be needful for severity of expression that they be of the second class, *i.e.* chiefly composed of straight lines, but diagonal ones (in the metopes, to avoid confusion with the surrounding lines, and in the pediment, to avoid a graver style of form than that of the member itself). Iron gratings, of large and simple, but carefully studied and varied patterns, might be placed before a dark tympanum and metopes (the latter much more recessed than anciently, as every recess should be, to suit this climate); and to procure those masses

The Corinthian order, with all its elegance, indicates the approach, if not the commencement, of decline in Grecian art: if not in architecture, at least in *sculpture*, of which this order did not absolutely *require* any. *Carving* had usurped its place, doubtlessly because the sculptors were no longer capable of executing those wonders, by the side of which all later sculpture would have seemed barbarous.

In the decline of taste, in all countries and in all arts alike, every thing is ornament, if not fritter, and no beauty is seen in the pure noble breadth and simplicity of the earlier productions. Those who built Henry the Seventh's chapel would have carried its 'cut-work and crinkle-crankle' all over the abbey, or all over Salisbury cathedral, if they *could;* but this being fortunately beyond their means, they bedizened the old buildings with coloured (instead of carved) littleness. So it was even in Greece, after Ionic and Corinthian elegance had been exhausted for variety. The Parthenon itself could not spurn from its eternal surfaces the brush that found them a convenient field for the display of its ephemeral fancies. First, the few mouldings were covered with forms imitative of the cut mouldings of the delicate orders; from narrower surfaces, they advanced to broader, till even the abacus was made a pattern-block. When the noble Dorian works began to be thus desecrated is uncertain, but probably not till a late date, as no Greek or even Roman writer makes the slightest allusion to the practice. On the contrary, the constant use of the term *white stone* (or marble) in their descriptions of buildings shows that a value was placed on that whiteness, which alone could render (even under a Grecian sun) some of the delicate adjustments of light and shade visible. The low relief of the

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of light in pleasing forms, necessary for the due effect at a distance, polygonal or star-like portions of these gratings (one in each metope and three or five in the pediment) might be filled up, not with a flat surface, but with several planes forming a pyramidal or gem-like variety of surface, giving bossiness and play of light and shade, without deviating from rectilinear form.

cell-frieze of the Parthenon, perhaps rendered a coloured ground necessary, even to understand it, in its dark situation, just under the ceiling of the colonnade; and probably the metopes and pediment sculptures, though not requiring such a contrivance for relief, had it at an early date; *not originally*, or the tympanum would have been built of a deep-coloured stone (as that from Eleusis, used for relieving the metal sculpture of Ionic friezes), for the taste of that day avoided paint wherever variety of colour could be given by different materials.

If there were any colouring on the Doric temples in times of Doric taste, it must have been confined to a few members, and intended to enhance the general monotony, just as a few cases of curvature and variety in form enhanced the general rectangularity. That monotony of colour is essential to the grand style, we may learn from all the works of nature in this style; —grand animals; grand vegetables; rocks; but especially mountains; for in these, if covered with vegetation, there is a sort of utilitarian necessity for variety of colour; and yet as soon as we retire to the distance requisite to see the whole, or a portion large enough to be grand, the atmosphere interposes its blue veil, and reduces the whole to sameness. What can more distinctly show that Nature *will not suffer* polychromy in her Doric works?*

It is possible that some of these temples, when composed of a coarse material, might have had the whole surfaces finished with some kind of stucco, paint, or varnish; and if the profiles were so adjusted as to give forcible shadows, and no nicety

* What the air does here, *time* often does for works of architecture. In a great and ancient building whose polychromic decorations have been sobered down by ages of neglect, till hardly distinguishable, a singular majesty is acquired from *this* circumstance, and not from the polychromy itself. Not only the venerable age, but the *dimensions*, are apparently increased by the dim and misty effect that makes every thing look more distant than it is. Cicognara and Zanotto attribute to this cause great part of the sublimity of the interior of St. Mark's at Venice; "an effect," says the former, "*most rare* to be obtained in edifices overloaded with so many rich ornaments."

requiring whiteness for its exhibition, a deep, intense, and uncommon colour (red, for instance) might perhaps harmonize with the severity of form better than whiteness.

As for the painted *ornaments* on the Parthenon, if they had been contemplated in the design, they would certainly have been carved, or (if flatness were wanted) inlaid, and not executed in so mean a manner, by those who rejected marble and chose ivory, for the statue within, because *though less beautiful and durable, it was more costly.*

It should be remarked, that the unparalleled excellence of the *sculptures* of this building has led to the habit of considering it the perfection of Doric *architecture* also, which is by no means so certain. Being built after the introduction of the Ionic, and nearly contemporary with its neighbour the Erechtheum, the richest example of that order, it certainly displays many approaches to Ionicism. The older examples have, besides their simplicity, decidedly more grace, particularly in the capital; nor can any compete in this respect with that most archaic form, of unknown antiquity, which crowns the rock of Corinth, with its columns of a single stone, only four diameters high, and yet (what wondrous art!) not only not clumsy, but singularly graceful. The loss of their entablature is one of the greatest losses architecture has to mourn.

As the Homeric poems have triumphantly refuted the attempts to regard them as compilations, so is there in the Doric order, and especially in its oldest examples, that perfect consistency and unity of idea that proclaims it to be, in all essential points, the production of one mind. Like other orders and styles, it must doubtless have received improvements from many hands; but unlike them, or rather in a far greater degree than any of them, does it exhibit the marked predominance of one genius; and on this point we are constrained to receive the tradition of Vitruvius, that whatever number may have aided in its progress, it had *one inventor*, the greatest mind that has ever been directed to architecture.

CHAPTER VI.

APPLICATION OF THE SAME PRINCIPLES TO COMPRESSILE BUILDING, BY THE MEDIÆVAL ARCHITECTS.

"On the whole, it seems to me that there is but one presiding principle, which regulates and gives stability to every art. The works, whether of poets, painters, moralists, or historians, which are built upon general nature, live for ever; while those which depend for their existence on particular customs and habits, a partial view of nature, or the fluctuation of fashion, can only be coeval with that which first raised them from obscurity."—REYNOLDS, *Discourse* IV.

THE Greek architecture, having in itself few elements of change or corruption, survived in tolerable purity for a longer period than any other known system, and even in its latest works (few of which, however, were durable enough to remain to us) it escaped one fault, that seems to have had a great share in breaking up all other styles, (the Egyptian, Roman, Hindoo, Arabian, and Gothic, for instance,) viz. the use, as ornaments, of miniature models of the principal features;—the puerility that led, in Egypt, to making a capital like a little house or temple; at Rome and Baalbec, to enclosing a niche with small columns and a pediment; in Gothic England, to applying *buttressets* and *pinnaclets* without number; in India, to a similar crowd of modelled colonnades, verandahs, and domes; and in Moslem lands, to shelves and cupboards like cloisters, and to that multiplication of little sham vaultings that has obtained the name of the *stalactite ceiling;*—the object of all being to get false magnitude by diminishing the

scale; an artifice that never succeeds except *on paper*, on which these things often look vast and sublime, but never in reality.

The Greek system escaped all this; but one constructive change, the introduction of oblique pressure, destroyed it.

The Romans (as the reader should be aware) succeeded in imitating no order but the Corinthian, and this only when they adhered strictly (at least externally) to Greek *construction* as well as decoration, as in the Pantheon portico, the temples of Nismes and Baalbec. The columns and entablatures stuck on the face of an arcade, as in the Colosseum, are a constructive lie, but not, as some suppose, a huge ornament. The lie consists in their *appearing* a mere ornament, while they are really indispensable to stability; for these columns are really the *buttresses* or props of the internal vaulted ceiling, and they would have to stand out obliquely and form apparent props, were it not for their entablature, which (often itself a piece of disguised arch construction, in order to throw all its weight on the columns,) serves the purpose of the Gothic pinnacle, to steady the column below, against the side-thrust; by combining its vertical pressure with the oblique thrust, to produce a resultant more nearly vertical, and capable of being confined within the foot of a vertically placed column.* But the column is false, because it appears made to sustain the vertical pressure alone. Being a prop, it should have appeared one; but this was never attempted till the thirteenth century. Till then, propping, though a sound principle in building, was considered an improper one to appear in architecture; and this *one disguise* kept the art for fifteen centuries in a continually-deep-

* Thus, these attached columns and entablatures are (as Pugin expresses a principle of all true architecture) *not constructed decoration, but decorated construction.* He regards it as a peculiarly *Gothic* principle, which is a mistake; it is not more a principle in good Gothic than in *all* good architecture, and was perhaps, on the whole, (taking all the works of a style together,) *less* attended to in the Gothic than in any other style, before the introduction of sham building.

ening degradation.* The *arch* was introduced by the Etruscans or Romans; but its necessary attendant, the *prop*, was struggled against for fifteen centuries before architects would admit it without a mask.

During this long period of false art, *mixed construction* was universally employed (as at present); the three principles of the beam, arch, and truss, being indiscriminately used,—the first, in both stone and wood coverings of small span,—the second, in the generality of stone coverings,—and the last in those of timber, of which only the roofs or ceilings were (at least after the last great Roman works, in the reigns of Constantine and Diocletian) entirely composed. One consequence of this was, that the long dark age of architecture produced no durable works; so that we hardly have any examples (or not enough to show us the general manner) of more than its *first* two or three, and *last* two or three centuries. The style of the former is called Roman; of the latter, *Romanesque*, or (in this country) Saxon and Norman, and by various local names in other countries. The durability of the Roman works arose from the national energy of character, and from Greek principles of construction being retained in porticoes, &c. The durability of the Romanesque arose from a general return to more substantial construction after the year 1000, which was expected to terminate the world; and also from the desire (caused by the frequent destruction of the open-roofed churches by fire) to render the whole or as much as possible of the fabric fire-proof, by vaulted ceilings below the timber roofing. At first they only covered the narrower parts and aisles† in this manner, but gradually extended it to the main avenue or nave. This was first done in Germany, and in its first examples we also find the first change from the round to the

* What then can be expected at present, when *all* architecture is disguise, concealment, and deception?

† As ambiguity sometimes arises from the uncertain meaning of this word *aisle*, (derivable either from *aile* or *allée*,) we shall use it only in the former sense, as applying only to the *lateral* alleys of a building.

pointed arch,—generally, but inaccurately, considered the grand distinction between the Romanesque and the *Gothic* styles. The change doubtless arose from ignorance and timidity of construction; but it had a most important artistic effect, by introducing an angle into the arch, and thereby bringing it back almost into a graver class of form than the third, and rendering it more fit for main structural features. The pointed-arch buildings, though not attaining (for no arched building ever can attain) the grandeur of the rectangular archless styles, yet have a higher degree of gravity and severity than the light sweep of the Italian round-arching can ever attain. Compare the interiors of the Lady-chapel at Southwark and the vestibule of Somerset House, and remember that the latter is by far the more massive.*

It is common to date the great transition, from the first appearance of a pointed arch, to the complete disappearance of the last round one. But in truth it extends from the revival of vaulting, (disused since the Roman times,) to the universal use of that covering, *i. e.* to the disappearance of the last lintel, or the last unvaulted space. All Romanesque buildings with vaulting are an approach towards Gothicity; and the building that contains a lintel, however short, is not completely Gothic. Even at Salisbury there are a few lintels across the narrow galleries and passages. In this continued progress, the change from round to pointed is only one step, and a far less important, and less exactly definable step than another we could name, which is the *unmasking of the buttress.* It is this that makes the grand restoration from falsehood to truth. It is this that distinguishes the beautiful church of Marburg

* That is, it *represents* a more massive construction. In considering modern English architectural works, it must never be forgotten that they differ from all others in this respect. Foreign architecture (and English before the fall of Gothicity) consists in *fine building.* But English architecture since that period consists in the *representation* of fine building, and its works must (like theatrical scenery) be criticised not as what they *are*, but as what they *represent.*

in Hesse, and the more glorious one of Salisbury, (begun a few years earlier, in 1219,) from all previous buildings, and stamps them as the first complete developments of the new system. The buttresses that prop their vaulting appear without disguise.

Vaulting, then, being the all-pervading MOTIVE,—the final CAUSE of Gothic architecture,* that to which all its members subserve, for which every thing else is contrived, and without which, the whole apparatus would be aimless and unmeaning,—it will be necessary here, first to take a rapid glance at that art, then at the modifications it introduced in the general design, and lastly in the subservient parts of the building.

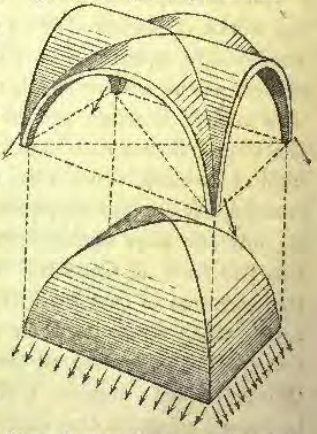
I. *Of arch or vault work as the fundamental principle of the Gothic system.*

Whether any people before the Romans were in the habit of building arches and vaults is a question having no bearing on our present subject; but we must observe that the *dome* is a simpler principle of construction than the arch,—is found in the works of animals (which the arch is not), and has been employed by many nations who could not (or did not) build arches, as the ancient Mexicans and the present Esquimaux. The ancient Romans, however, (who constructed with brick the largest domes even now in existence), not only used this kind of covering, which rests on *all sides* of the space to be covered, but also the simple or waggon-head vault, which rests on only *two sides* of the covered rectangle, leaving the other two free from all pressure. But further than this, they were the inventors of that highly ingenious contrivance, the *cross-vault*, which exerts its whole pressure solely on the *angles* of the apartment, leaving all the sides free. Its origin may be thus explained: suppose a simply vaulted passage had to be continued *across* another exactly similar passage, lying at right angles to its course, and it was required to leave both corridors

* This was first shown, we believe, by Ware, in his admirable 'Tract on Vaults.'

perfectly free. First, suppose them to interpenetrate each other, without omitting any part of either; the square of intersection will then be completely enclosed by four walls, and covered by a double ceiling, for each vault by itself covers this space: every point, therefore, in this square is doubly covered, except the points situate along the two diagonals of the plan, for vertically over these two lines do the two vaults interpenetrate each other. If we confine our attention to the lower of the two ceilings thus formed, we shall find it to be a square dome, for a dome may be erected on a square or any other form of base, and its property is always to rest equally on the whole enclosure: now the four ridges, or (to borrow an expression from carpentry) the *hips* of this square dome, are the common intersection-lines of the two vaults, and are evidently simple elliptic curves in vertical planes: consequently these two semi-ellipses have the property of *arches*, and can support not only themselves but the whole of the upper ceiling. Hence the lower ceiling or square dome may be entirely removed, as well as the four walls on which it rests, leaving both passages open and the cross-way completely covered by a ceiling that rests solely on the four angles: it is even independent of the vaults over the four arms of the cross, which may be entirely removed, leaving the cross-vault to be confined solely by four definite pressures applied diagonally to its four angles.

Square cross-vault, resting *upon* and *against* the angles only of its base.



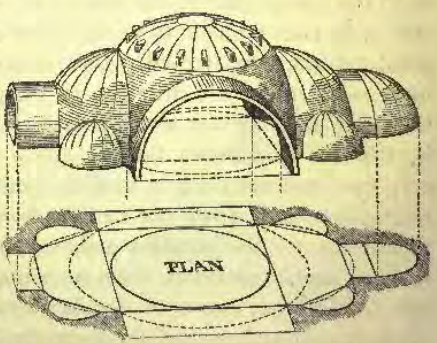
Square dome, resting *upon* and *against* the whole enclosure of its base.

The same elliptic lines which in the square dome formed external ridges, here form internal ridges, which are called *groins*.

The beauty and advantages of this kind of vaulting led the Romans to use it, not only over a cross-way, where it was necessary, but also over all corridors and long apartments, by dividing them into a series of squares, each covered by a cross-vault, thus throwing the whole pressure of the vaulting on the points of division between these square compartments, and leaving the remainder of the walls free for openings, or to be constructed ever so slightly, or even omitted altogether. The boldness of their constructions of this kind has never been equalled. There is evidence that the Temple of Peace, now in ruins, had its nave covered by cross-vaults 83 feet wide, so that the groins on which the whole rested had a span of $83 \times \sqrt{2} = 117$ feet; and an apartment in the baths of Diocletian, still in use as a church, has a similar ceiling of about 86 feet in diagonal span still remaining, although it is formed on an unsound principle. The compartments are not square, but rather wider in one direction than the other. Now in this case, either *one* or *both* of the crossing vaults ought to have been *elliptical*, so that both, notwithstanding their unequal spans, might have their springings at the same level, and their crowns also at the same level. The groins would then have been confined to vertical planes over the two diagonals of the compartment. But, in fact, both vaults are made semicircular, and their crowns being at the same level, their springings are not at the same level. The consequence is, that the intersection lines or groins are lines of double curvature, and not being in vertical planes, are not therefore true arches, and would not be able to support themselves, were it not for the immense and wasteful thickness of the vaulting, containing several times more material than is necessary. Moreover, curves of double curvature are invariably displeasing in architecture, for the eye cannot readily understand them.

With the decline of Roman power, this art of vaulting was lost, and for centuries the basilicas of Italy and the churches of all Roman Christendom remained with nothing

but timber roofs. The Greeks, however, retained (or else re-invented) another mode of vaulting possessing many of the advantages of groining, but not all of them. This system depended on two simple geometrical principles—1st, that every section of a sphere by a plane is circular; and 2ndly, that every intersection of two spheres is a plane curve, and therefore circular. The Greek vaulting, then, consists wholly of spherical surfaces, as the Roman consisted wholly of cylindrical ones. A hemispherical dome may be supposed, whose base circumscribes the plan of any apartment or compartment, square, rectangular, triangular, or polygonal. Now imagine the sides of this plan continued upwards, as vertical planes, till they meet the hemispheric surface. This meeting-line must in every case be a semicircle, and may therefore be made an open arch; and the portions of the dome thus cut off from every side of its base may be omitted altogether, provided their office as buttresses to the remaining portion above be replaced by the pressure of some other vault, which may be of any kind, if it be applied against the semicircular arch. Thus no walls are required on the sides of the supposed compartment, all the weight of the *pendentive* dome (as it is called) being thrown on the angles of its plan. Thus this dome serves for covering an open cross-way, and is so applied at Sancta Sophia, of which the covered cross-way, 115 feet square, might well be esteemed, in the barbarous age of its erection, a wonder of the world; and the same idea repeated without end,—the same sprouting of



Vaulting of Sancta Sophia: the dome over the central square resting *upon* its angles, but *against* its sides.

domes out of domes,—continues to characterize the Byzantine style, both in Greek churches and Turkish mosques, down to the present day. They have been well described by Hope as a congeries of globes of various sizes growing one out of another.

This system of vaulting has been adopted by two great modern architects,—by Sir C. Wren at St. Paul's, and by Soufflot at St. Geneviève, Paris; by the former with great success, and in both made to harmonize well with the Roman style. But observe the inferiority of this to the Roman cross-vault. The latter is, as we have seen, independent of the four adjoining vaults, over the arms of the cross. But the pendentive dome cannot subsist without them; for though its *downward* pressure is confined to the angles of the plan, its *outward* push is exerted against the sides,—though it rest *upon* four points only, it rests *against* innumerable points, viz. against the whole semicircle of each of the main arches. But the cross-vault has its whole pressure,—not only its weight, but its push,—collected into four definite resultants applied to the angles only, so that it might be entirely supported by four flying buttresses, no matter how slender, provided they were placed in the right directions to transmit these four simple resultant pressures, and strong enough not to be crushed by them.

At the first dawn of Gothic science, when the numerous and disastrous fires among sacred edifices led to the attempt (first perhaps in the Rhine valley) to vault them with stone, a mixture of the Roman and Eastern methods seems first to have been tried, and some curious combinations of this kind are still to be seen in the old churches of Cologne and its neighbourhood. The superiority of the Roman system, however, soon led to its exclusive adoption, and it is to be seen in the crypts and aisles of many buildings of our own country, as in those of the naves at Durham and Ely and the transepts at Ely and Winchester; but in extending this kind of ceiling to the central avenue, many difficulties arose, not

perhaps so much from the increased span and height above the ground, as from the oblong form of the compartments, (those of the aisles having been square;) for the builders of this age very properly rejected the doubly-curved groins of Diocletian's baths, which indeed would have been quite impracticable over a plan differing considerably from a square. Various expedients were resorted to, and the only successful one for vaulting the clerestory with *round* arches alone, was by making its comparments square, and letting each correspond to *two* compartments of the side aisle. This is the mode adopted at the three great Romanesque cathedrals of Worms, Mentz, and Speyer (in the last of which, the diagonal or groin span is more than 60 feet), and in the two great abbeys founded by William I. and his Queen, at Caen; and it seems to have been intended, but never executed, in the nave at Durham. We have no example however, in England, of a nave with round-arched vaulting, if we except the small massive chapel in the White Tower, London, which is a simple vault without groins, and is not a *clear* story, but enclosed between upper aisles, so that there is no difficulty as regards its abutments. But the various attempts to overcome these difficulties would hardly fail to lead, first to the mixture of pointed vaults with round ones, as in the Rhenish churches, and then to the exclusive use of the pointed form. Without detailing the various modes in which this might happen, and did happen, as appears from the various interesting expedients seen in those buildings,* we may observe that, as the chief practical difficulties attached themselves to the upper and horizontal portions of the round vaults, nothing could be more natural (in an age unfettered by pedantic admiration of classical precedents) than to get rid of these difficult and hazardous parts of the work, by beginning each foot of the arch as if it were meant for an arch of wider span, so that the two curves might meet, before attaining the

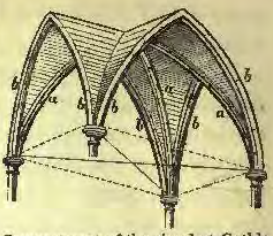
* Whewell's 'Architectural Notes on German Churches.'

horizontality which was dreaded in the crown of the round vaulting.

The Romans had strengthened their vaults with semi-circularly-arched ribs, *i. e.* portions thicker than the rest of the vault, and appearing inwardly as flat bands projecting slightly from the inner surface, and harmonizing well with the similar forms of pilasters in the walls; but they did not place these ribs where they were most needed, viz. along the elliptic groins, which bear all the rest of the ceiling. The early Freemasons took care to strengthen these important lines, and (on the same principle that modern joists are made deep and narrow) they gradually converted the broad shallow Roman band into a deep narrow rib, by first simply diminishing its width and increasing its projection or depth, then chamfering the edges till its section became a semi-octagon, (as may be seen in the *newer* Romanesque portions of Winchester transept, but not in the older portions, which are examples of the Roman manner unaltered.) They also *beaded* the two edges of the rib, and then enlarged these beads till the whole became a *double roll* with a mere fillet between them, whence the transition is easy to the deeper and more variously moulded vault-ribs of the Early and Complete Gothic.

But, meanwhile, important improvements were made in the general forms of the vaulting, till a new principle, very different from that of the Romans, was established. We should observe that the interpenetration of two pointed vaults (as well as of two round ones) could only produce elliptical lines, or else lines of double curvature, (for two cylindrical surfaces can intersect in no plane curve except an ellipse,) yet the early Gothic architects rarely made their groin-ribs elliptical, and never deviating from a vertical plane. These ribs were usually simple pointed arches (of circular curvature), thrown diagonally across the space to be groined; and the four arches over the sides of this space were equally simple, the only care being that all these arches should have their

vertices at the same level. The shell of the vault, therefore, between these ribs was no regular geometric surface, but simply such as might have been formed by laths laid across from rib to rib. This shell is often no more than six inches thick, while Roman vaults of the same span would have been three or four feet.



Compartment of the simplest Gothic vaulting: *a a a*, groin-ribs; *b b b b b b*, side-ribs or arches bounding the compartment.

The difference of principle then was, that the Romans made their vault-*surfaces* geometrically regular, and left the *groins* to take their chance; while the early Freemasons made their *groins* (*i. e.* ribs) geometrically regular, and let the intermediate *surfaces* take their chance. This was a vast improvement both in construction and in art;—constructively, because the groins are really the supporters of the whole work;—and artistically, because the eye takes cognizance of *lines*, not surfaces; and while it is offended by the double curvature of the groins in Diocletian's baths, it scarcely detects the winding and irregular forms of the Gothic vault-surfaces.

We need hardly observe that these winding surfaces were not formed of cut stone but of stucco, the shell itself being merely a rubble-work of the lightest minerals to be had, or, in this country, chalk.* The Byzantines, long before, had

* This economical mode of vaulting has now fallen into disuse; but it was applied with perfect success, in 1819, in constructing a pointed vault of the simplest kind, over the Romanesque nave of Christchurch, Hants, the diagonal span being about 31 feet. The Gothic masons, however, at least in this country, seem to have feared its application to works with a wider groin-span than 40 feet; for in this manner are constructed the ceilings of all the English cathedrals, with two exceptions, York and Winchester, which have somewhat wider diagonal spans than the rest. The nave vaults of Winchester are entirely of cut stone, like those of the famous chapels at Ely and Cambridge, and (without the frittered panelling of the latter) are not inferior in beauty and extent to any work of

diminished the thrust of their domes by building them of pumice-stone, hollow bricks, or pots (a practice revived by that excellent master of construction, Sir J. Soane); and a similar motive led to the adoption of the material called by monkish writers *tophus*, volcanic. But the English masons, who, during the Romanesque period, had been but timid followers of the continental ones, became, during the Gothic period, their masters, and constructed many vaultings which for beauty and geometric perfection have no parallel abroad. Indeed, the defect of the winding surfaces, though carried to a great extent in the boldest foreign vaultings, seems to have been hardly tolerated in England,—being here confined to the earliest works, as Salisbury cathedral. In the next step, the groin-ribs were elliptical, as in the choir of the Temple church; and hence, when, in approaching the complete Gothic, intermediate ribs were inserted between these and the original arches over the sides of the plan (as in the south and west sides of Westminster abbey cloisters), these ribs also had elliptical curvatures different from those of the groins, in order that the vault of cut stone built upon them might have a regular cylindrical surface.*

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the kind; but the choir of the same cathedral, and the whole of York, have sham vaults of wood and plaster,—the only instances, perhaps, of Gothic deception. At present, such deceptions are the only vaultings made. Their uselessness is shown by the two disastrous fires at York Minster, now said to be 'restored,' that is, prepared for a third conflagration. Many other cathedral roofs have caught fire, but sustained hardly any damage, all supply of air from below being cut off by the fire-proof ceiling. The duomo at Milan, the abbey of Batalha, and Redcliffe church, Bristol, have fire-proof *roofs* as well as ceilings; so that the two former are permanent undecaying structures, and the latter would be so, but for the badness of its stone.

* In these cases, as each pair of ribs that meet at a point not over the centre of the plan, form a *leaning arch*, tending to fall towards the centre, this tendency has to be resisted by a *ridge-rib* extending from the centre to the junction of the last pair next the side of the plan; but there is no reason for its extending quite to the side-arch, though it

It was well observed, however, by Ware, that "the Romans, the Byzantine Greeks, the Freemasons, and the modern bridge-builders, successively tried the ellipse in architecture, and rejected it." The trial which the Gothic masons gave it was exceedingly short, and has accordingly escaped the notice of many inquirers; but however few the examples of Early English elliptic groining may be, we must not pass over so important a link in the history of the style.

The elliptic groin-rib seems to have been first tried a short time previous to the invention of the intermediate or *tierceron* ribs,* and to have been abandoned very soon after that invention; and I think the examples containing elliptic curves will be found to present generally another peculiarity, viz. that the courses of the masonry all run *horizontally;* while in both the preceding and succeeding examples, they take, between each pair of ribs, a position equally inclined to the two ribs;

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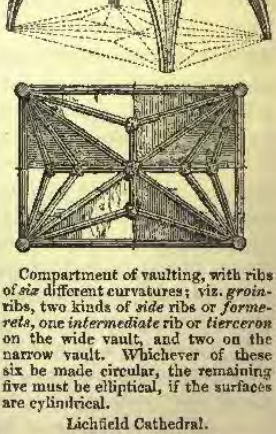
usually does so in England. In the annexed figure, the ridge-ribs are shown, as in foreign examples, continued no farther than is necessary. In this country, intermediate ribs and ridge-ribs appeared in the later Early English (as at Westminster), and became quite general in the Mid-Gothic (as at Exeter, Lincoln, and Lichfield); but abroad, these features are confined to the declining Gothic, — not appearing till at least a century later than with us.



Compartment of vaulting, with ribs of *six* different curvatures; viz. *groin*-ribs, two kinds of *side* ribs or *formerets*, one *intermediate* rib or *tierceron* on the wide vault, and two on the narrow vault. Whichever of these six be made circular, the remaining five must be elliptical, if the surfaces are cylindrical.

Lichfield Cathedral.

* The French have preserved some of the old names of the chief vaulting features, among which *tierceron*, applied to an intermediate rib between the groin and the side of the compartment, and *formeret* to the ribs *forming* or enclosing each main compartment, seem useful. In England, the ridge-rib preceded the tierceron, for we find it in Salisbury chapter-house and the chancel and transept of Westminster;

so that, meeting the ridge-piece obliquely, they are received by a number of saw-like teeth cut in its sides.

We have a very instructive series of examples *before*, *during*, and *after* the Elliptic Period, in the cloisters of Westminster abbey,—the relative dates of which, however, must be inferred from the vaulting alone, as almost every other feature has been restored in later styles. From the plainness of the north vaulting, however, and the richness of that on the east side, I think no one will dispute that the former (without either ridge-ribs or tiercerons) is the oldest, and the east side the newest portion. Now neither of these exhibits elliptic groins; but the south and west sides, and the passage leading into Dean's Yard, exhibit them very distinctly: whence I infer that the northern side was executed before the *trial* of the elliptic method, but the eastern after its *rejection*.*

We shall not wonder at this rejection when we remember that even in a perfectly plain, unmoulded elliptic arch, the drawing of each joint is a problem, and that the accurate working of an assemblage of mouldings along a course neither straight nor circular, is no easy piece of masonry. In further augmenting, then, the number of tiercerons, and making them ramify (as in that compartment on the east side of Westminster cloisters which contains the entrance to the chapter-

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while the tierceron appears only in the nave of that building. In both these examples, a refined taste led to making the ridge feature quite different from the ribs, because, being not a support but a pendent load, it required delicacy instead of strength, and therefore consists not of mouldings, but (at Salisbury wholly, and at Westminster partly,) of undercut foliage. The later practice of making it represent a rib is a falsehood, when there are no tiercerons or leaning arches to be distended by it. Without them it is a mere ornament.

* It should be observed, however, that the elliptic curvature is never continued down to the springing, but no lower than the point where the ribs begin to touch or mitre against each other; for below this it is necessary that they should all have the same curvature, as will presently be explained.

house), the artists substituted for elliptic curves, *imitations* of such curves formed by combinations of circular arcs. The surfaces of the vaults, therefore, could not be cylindrical, and all intention of making them so was relinquished. Yet the nearness of the ribs rendered the narrow portion of vault between each pair practically *almost* cylindric, though these various strips of cylinders did not (as in the elliptic method) fit together as portions of one continued surface. Yet from their narrowness, each by itself was free from that plough-share-like twist which offends us in the early vaultings at Salisbury and the great continental cathedrals.

Thus the abandonment of *simple circular* ribs for *elliptic* ones was an improvement, and the rejection of elliptic for *false elliptic*, or *compound circular* ones, was a further improvement, as was indeed every change in the general form of vaults, down to the very latest examples, but it was otherwise with their decoration. This, like the decoration of all the other features, attained its artistic culminating point during the fourteenth century, and during the prevalence of this pseudo-elliptic method of rib-drawing.

In the formation of the compound circular ribs three conditions had to be observed,—1st, that the change from one radius to another should be effected without an angle, *i.e.* that the two arcs should have a common tangent at the point where this change occurs;—2ndly, that the feet of all the ribs should have the same radius, and, in fact, be exactly similar, up to the level at which they completely separate from each other; for otherwise this separation would occur at different heights between different ribs, which has a very bad effect;* — 3rdly,

* This precaution was equally necessary in the case of the elliptic ribs, and is observed most accurately in the vaulting of the Dean's Yard passage above mentioned, which, though simple, is a most splendid piece of architectural geometry. In the clumsy contrivances preceding this, the ribs sprung from the capital, not only with different curvatures but with different inclinations, the centres of some or all being lower than the springing. Afterwards this was not allowed. A condition was imposed, first,

that from this point upwards their curvatures should be so adjusted as to make them all meet their fellows at the same horizontal plane, so that all the ridges of the vault may be on one level.*

The pseudo-elliptic vaultings are more pleasing than the truly elliptic ones, on account of the greater variety arising from the plain portions not forming parts of one continued surface; so that no rib can strictly be called a *surface-rib*, though that name is commonly given to all except the groins, ridge-ribs, and wall-ribs or formerets next the wall.

But the geometrical nicety, not to say difficulty, of such works led, in the fifteenth century, to a simplification of their general form, yet admitting of indefinite increase in the decoration. This was the beautiful invention of what is called *fan-tracery vaulting*, (very improperly, for a fan-like arrangement of ribs may be, and often is, applied to the surface of any kind of vault.)

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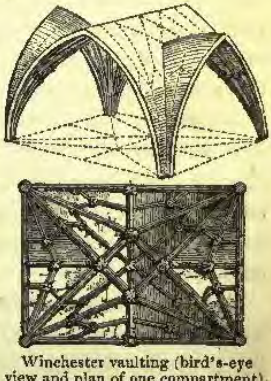
that they should all spring *vertically*, and then, all *with equal radii*. The problems thus arising, rendered a single rib a work of more thought, than a whole building to many modern architects.

* When they are not at the same level, either the ridges must have a domical rise (as in most foreign examples), which gives them a push against the enclosing arches, as at St. Sophia, and is therefore objectionable; or else the lower vault, if it have a level ridge, will at its intersection with the side of the higher, form a leaning arch (called a *Welsh* arch), which is supported by the ribs above its vertex. This construction was not common in the pure Gothic, though examples occur in the beautiful domed kitchen at Durham, and in Winchester cathedral nave; in the latter unnecessarily, for the side arches rise as high as the main vault, but their ridges *descend* towards it,—a decided defect, as it causes them to push inwards against its haunches or weakest parts.



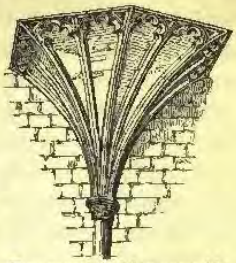
Winchester vaulting (bird's-eye view and plan of one compartment).

If we must call this invention after some familiar or natural object, it should be named *palm*-vaulting; but if from its geometrical properties, then *conoidal* or *concavo-convex* vaulting (as Professor Whewell calls it); the latter name implying that every part of its surface is at once concave in one direction, and convex in another (like the surface of a bell near its lip), while the term *conoidal* is here used in contradistinction to *pyramidal*. If we observe the ceiling of a building with no clerestory, but aisles of equal height, and vaulted in the early Gothic manner (as the choir of the Temple church, or the Lady-chapel at Southwark), we shall perceive that the portion of vault springing from each pillar has the form of an inverted concave-sided *pyramid*, its horizontal section at every level being square or rectangular. Now the simplification effected by the later Freemasons consisted in converting this four-sided pyramid into a many-sided one, and eventually into a *conoid*, (it is not called a cone, because the sides are still concave.) The great advantage of this was, that all the ribs forming or supporting the conoidal surface became identically alike in curvature, so that they might all be made simple circular arcs, and the niceties of elliptic geometry (or the complexity of its imitation by variously adjusted circular arcs) entirely dispensed with.

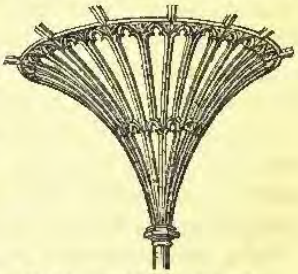
Rectangular Vaulting-pyramid.
a a a a, groin-ribs.
b b b, formerets.
c c, tiercerons.

This great improvement was not effected all at once, but by many successive steps, the earliest of which did not appear till after the full establishment of the Perpendicular style. One of these first steps may be seen in the little porch of St. Sepulchre, London, which the student should compare with the neighbouring earlier porch of the Guildhall. Each

consists of two compartments, and therefore contains two inverted half-pyramids, and four inverted quarter-pyramids. The plan of each half-pyramid in the Guildhall porch is a *half-square;* in the other it is *four sides of a hexagon.* The former half-pyramid therefore has only three faces, the latter has four; *i. e.* the former has only *two* edges or groins, where the latter has *three,* the additional one being at the formeret dividing the two compartments of the porch. This example has a groin at every alternate rib, so that if the plan of the half-pyramid were an exact *half*-polygon (which was the next improvement, instead of being more than half), there would then be only two kinds of ribs, all the *groin*-ribs being alike (as to curvature), and all the intermediate or *surface*-ribs being also alike. The next step was to make every rib equally a groin-rib, so that if they were numerous, the intervening surface became practically a circular conoid, and the last trace of groins was obliterated. Thus the whole progress of vaulting was from the Roman method with ridges internally but none externally, to the *English* method (for it appears to have been peculiar to this country) with ridges externally but none internally.



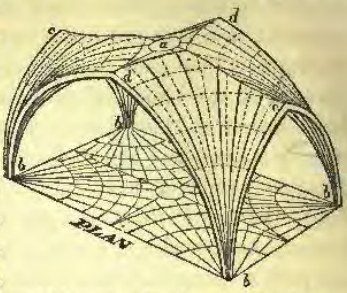
Hexagonal Vaulting-pyramid, imperfectly developed. St. Sepulchre, Newgate.



Vaulting-conoid, with all its ribs of equal curvature.

In the above example (St. Sepulchre) it will be observed that the ribs, rising all to an equal height, leave a lozenge of flat ceiling in the centre of each compartment, and this space would be larger in the more perfect development of this method. Hence, on a large scale it is necessary that this

space should be domed, and this is most consistently done (as in the chapel at Cambridge) by simply continuing the ribs with unaltered curvature, till they meet and form two ridges, as in the early vaulting; but with this difference, that here, as the ribs have all the same radius and different lengths, they must all rise to different heights before meeting, so that the ridges are not *level*,



Conoidal-vaulting, King's college chapel, Cambridge, (skeleton lines of one compartment.)

as in the early vaulting, but gradually descend every way from the centre point, which is the highest in the vault. In the Cambridge example, indeed, this is not fully carried out, for no rib is continued higher than those over the longer sides of the compartment, viz. *b d*, *b d*, so that a small flat lozenge is still left, with the boss *a* in its centre. But the reader will easily perceive that if *all* the ribs were continued till they met, the junction at *a* would be higher than those at *d d*; so that the four ridges would all rise, not only from *c* and *e* to *a*, but also from *d* and *d* to *a*. But, notwithstanding this domical rise, the vault exerts no push against its four containing arches, because each pair of ribs that meet and form a Welsh arch, sustains the push of so much of the ridge as is contained between their apex and that of the next higher pair, while the *last* portion of ridge next each of the walls or formerets is so nearly horizontal, as to exert little or no push.* Thus does this admirable invention (of

* Ware, in his generally excellent tract, makes the transverse ridge *c a c* convex from end to end; but it is evident that the intersection of these conoids will give a curve which (though it may have contrary flexure) must always be concave at its lowest points, *c c*, where its tangent must be horizontal; whence arises the beautiful property of this vaulting, when closely ribbed, to exert no thrust against its side arches.

which our nation may well be proud) avoid all the defects of other systems of vaulting, and combine all their advantages, —lightness, geometric simplicity, and entire concentration of all the lateral push (as well as weight) on the four supporting points, where it is all collected into four definite resultants.*

There must be one disadvantage, however, attending the conoidal vaulting in its simplest form. In order that the arch which spans the compartment diagonally may be a pointed arch, its two halves, *b a*, *b a*, must obviously be less than quadrants, and as these are the longest ribs in the whole vault, all the other ribs must be *considerably* less than quadrants (for they all have the same radius); and hence, if the plan of the compartment be considerably oblong (as in this example), it is easy to see that the two shortest ribs, *b c*, *b c*, must form, over the narrow side of the plan, a very acute *lancet* arch, highly inconvenient, and scarcely admitting windows of an elegant shape and sufficient size. If the arch, *b c b*, were made to correspond with a well-shaped window-head, the longer ribs, preserving the same curvature as *b c*, would not reach to *a*, or even *d*, without becoming horizontal, or even bending downward. To obviate this, the ribs are made less curved in their upper parts than in the lower. Perhaps the most proper curve for them would have been a parabola with its axis horizontal, because, however far it were prolonged, it would always continue to rise; but the Gothic artists were content with a sudden (instead of a gradual) change of curvature, *i. e.* as soon as the ribs arrive at

* M. De Lassaulx well observes of the German Freemasons, that the vague ideas entertained of their profound science and their lost secrets, have no foundation; that they were simply men of sound common sense, determined to excel in their art. Nor is this conclusion at all weakened by the less bold but more beautiful productions of their English brethren. It was not so much geometric science as *statical common sense*, that conceived and executed the wonder of Cambridge, (and the less known but more remarkable example at Trinity church, Ely,) as well as the vast shell at Cologne.

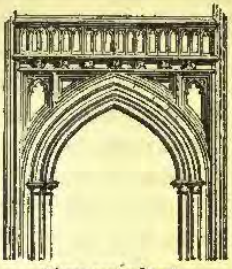
a certain level (say *c*), the portions above this level are drawn with a longer radius, that they may continue to rise till they meet their opposite fellows at *d* or *a*, thus forming, over the diagonal of the compartment (and also over its longer side, if oblong), arches of which each half consists of two arcs drawn from two distinct centres, but always having a common tangent at the point where the curvature changes. These arches, described from four centres, soon found their way from the vaulting into all other parts of the building, perhaps from a feeling that their presence in so important a feature did not harmonize with the general use of the two-centred arch elsewhere. Hence this four-centred arch (which, like the conoidal vaulting, seems peculiar to England,) became the most distinctive feature of our latest After-Gothic, or that which, from the dynasty under which it prevailed, has been named the *Tudor* style.

The Tudor or four-centred arch is not necessarily flat or depressed. Its main advantages are, that it can be made of any proportion, high or low, and always with a decided angle at the vertex; whereas the common Gothic arch must always be of a higher proportion than a semicircle (*i. e.* higher than half its span); and in approaching this form, its point becomes so obtuse as to be hardly perceptible, besides losing the structural advantages of a pointed arch,* which arise wholly from every part of its intrados being highly inclined to the horizon. It is true that the segmental pointed arch (that with its centres lower than its springing line) combines all these advantages, but the angles it forms with its supports, at the springing, are unpleasing. Now, if these angles be rounded off, we obtain the four-centred arch.

Such reasons as these may have led to the compound pointed arch, independently of its use in vaulting. Perhaps the earliest specimens of such arches occur in Wykeham's last works, the

* Lightness of centering required, and ability to support a concentrated weight on the vertex.

aisle-arches and main vaulting of Winchester nave, which, however, are not four, but *three*-centred; the lower portions of both sides being drawn from the same centre, so that the whole resembles a semicircle, with its upper part cut away to form a point, which is much more decided than that of a simple Gothic arch of the same span and height. The variety of curvature in compound arches often gives them a peculiar grace.*



Three-centred arch, Winchester nave.

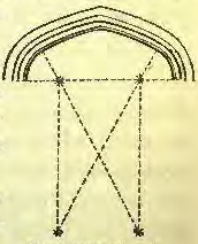
But the 'depressed' Tudor arch is not a *necessary* adjunct to conoidal vaulting, and the gorgeous chapel of Henry VII. presents us (if we can look through the disguise of meretricious ornament) with a noble attempt to combine the advantages of this vaulting with the aspiring expression and small lateral thrust of the high two-centred arch.† The singularly complex vaulting over the clerestory of this chapel, seldom rightly understood, becomes, when divested of its inessential parts, quite intelligible, if we remember the architect's object, to

* The three following points should be attended to in these arches:

1. Their effect mainly depends on the angular extent of the lower curve, which, in good examples, is not more than 65°, nor less than 45°.

2. The radius of the upper curve varies from *twice* to more than *six times* the radius of the lower; but generally speaking, the greater their disproportion, the more obvious, and therefore the less pleasing, is the sudden change of curvature.

3. It was a common (but not a general) rule to place the lower centres vertically below the upper and opposite ones, thus:

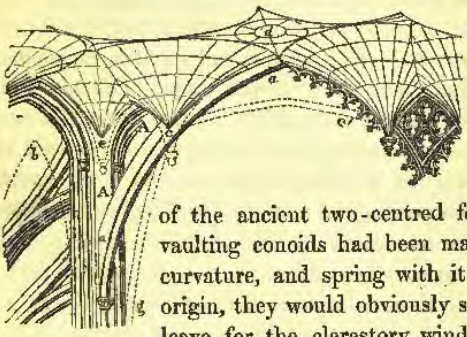


Four-centred arch.

† Since writing this, I have seen two other examples of this most refined vault-work, in the Cathedral and Divinity School at Oxford. They are all three nearly contemporary, so that the priority of the invention may be doubtful.

combine the most recent constructive science with the artistic expression of an earlier style, and this in the face of a great difficulty, arising from the unusually oblong plan of the compartment (nearly thrice as long as its breadth), which, if treated by the Cambridge method, would have required an exceedingly depressed arch, hardly practicable, or at least, by its great lateral thrust, requiring most clumsy expedients on the outside for its abutments.

The essential parts of one quarter of a compartment are shown towards the left hand of the accompanying figure. It will be seen that the whole rests on the great arch *a a*, dividing one compartment from another. This is of the ancient two-centred form, but if the vaulting conoids had been made to follow its curvature, and spring with it from the same origin, they would obviously so intersect as to leave for the clerestory window nothing but the small inconvenient lancet-formed space shown by the dotted lines at *b*. To gain height and space, therefore, for these windows, the main conoids are made to spring, not from the foot of the arch *a*, but from a point *c*, about half-way up its curve; and the ribs, diverging thence in every direction, form, of course, not merely half but *entire* conoids, and it is no small advantage that the lateral thrusts of all these ribs destroy each other; but their downward pressure, embracing the collected weight of nearly the whole ceiling, concentrated on the two points *c c'* of each arch, is a serious defect with the present form of arch, for it properly demands an arch with *cusps* at *c c'*, as well as at the vertex; and though the *three-pointed* arch thus formed might be unpleasing in ordinary situations, it would be beautiful here, because statically cor-



rect.* It might have been obtained without interfering with the general design, either by bringing up a highly inclined rib from some point below *g*, to give additional support to the point *c*, or else by throwing a flat arch across from *c'* to *c*, whose lateral thrust, by combining with the downward pressure on these points, would turn the resultant more aside, into the body of the rib *a*. Such features occur as mere ornaments in Gloucester, and still more in Bristol cathedral.

But to return, the conoids springing from *c c'* would suffice to cover the whole plan, but the semi-arches formed between them and the wall would have been far from pleasing, besides exerting a push against the top of the wall, where it could not be conveniently resisted (because not collected into a single resultant). The conoids are therefore opposed by corresponding half-conoids springing from between the window-heads at *e*, and to meet their outward thrust, an additional range of flying buttresses is provided, above the common or lower range, which take the thrust of the arches *a*.† The two

* This property of arches (by which each pressure concentrated on a point calls for a cusp at that point, and each cusp calls for a concentration of pressure on it,) may be shown by the *catenary*, which becomes an inverted Gothic arch whenever a weight is suspended from one link. Hooke's discovery, "ut pendet continuum flexile, sic stabit contiguum rigidum inversum," is a motto never to be forgotten in Gothic building. A French street lamp, or a spider's web, may thus teach the architect important lessons; and perhaps the equilibrium of some of the boldest vaultings was insured by experiments on systems of chains representing the ribs inverted.

† The double ranges of arch buttresses to Westminster abbey and to most foreign buildings are provided for a different reason: in those cases all the pressures of the vaulting are collected into a *single* resultant, but as the *exact* position of this resultant would not be easily found, two buttresses are placed to insure its falling somewhere between them; a very necessary precaution, for even in the wonderful structures at Amiens, Beauvais, and Cologne, the position of the flying buttresses betrays great ignorance on this point.

flying buttresses are distinct, though connected by a web of open tracery, which also fills the space A A.

So far, if the constructive principles of this ceiling had been displayed, instead of disguised, it would (whether much or little ornamented) have been as much admired, and perhaps imitated, as it has actually been wondered at and condemned. But the disguise may be thus accounted for: as the ribs of the conoids and half-conoids do not spring vertically from their origins at *c* and *e*, their intersection would form a segmental arch (with angles at its springing); but this not being a graceful form of window-head, its angles are rounded off, and to correspond with this and leave no portion of the wall unoccupied, the half-conoids are prolonged downwards into the form shown in dots at *e*. But uniformity was carried too far in making the main conoids, *c*, assume the same form, for this gives them (as shown at *c'*) the air of huge pendents, for which, indeed, they are often mistaken.* It is needless to say that the only real pendents are those hanging from the centre of each compartment, as from *d*; and these, which occur also in the same situation in the aisles of this building, at St. George's chapel, Windsor, and in many foreign buildings of an earlier date,† are not, as many suppose, useless excrescences: they serve, like the ridge-ribs and bosses of a purer style, to supply

* Another unfortunate disguise arises from the foliation applied to the rib *a*, which reduces that important member to apparent insignificance. Where strength is required, it should not only exist, but *appear*. Bold and simple mouldings should have sufficed for the decoration of this main stem, which so beautifully, like the leaf-stalk of the fan-palm, supports its spreading burden, from which the artist might also have learned the necessity of an angular bend at *c*. The pliancy of the vegetable structure and the brittle rigidity of the stone do not, in this respect, lead to different constructive principles, since the *tendency* in the former, and the *aim* in the latter, are alike—to avoid all but *compressile* forces.

† The Lady-chapel at Caudebec, the south porch of Louviers, and that of St. Ouen at Rouen, lately well restored. The first example (figured in Pugin's 'Specimens from Normandy') is a most preposterous and uncalled-for piece of legerdemain.

that load on the vertex which the equilibrium of the pointed arch not only admits, but requires. The abuse of these members arose when they were formed into the semblance of ribbed and panelled conoids,—features of support, apparently pointing to (and therefore demanding) supports from below.

The continued decline of Gothic art, (not of Gothic *science*, for that continually advanced to the end, but of *art*,) during the fifteenth century, may be traced in a great measure to this passion for extending to one feature the mode of decoration proper to another feature, of a totally different kind. What can be more absurd than battlements, reduced to 2 or 3 inches in height, running along the transom of a window? Similar vagaries, adopted for the sake of novelty, (which they might produce in individual cases,) ended in reducing the whole decorative system to one of unvarying sameness. In the pure Mid-Gothic, walls and vaultings had each their proper mode of surface-decoration, quite different from each other, as their different uses demanded. The walls had their blank arcades or arched panels; the vaults their deep ribs of various degrees of strength, according to their orders of importance,* with the leafy bosses at once concealing their junction, where the mouldings could not be nicely mitred, and affording double strength where double strength was required;† but they had no foliations or archlets, which, applied on a curved surface, would be evidently without use or meaning. The first decided

* A great beauty, yet overlooked or misunderstood in the only two vaultings of our great national work. In the Victoria Tower, the secondary tiercerons (or *tiercerets*), diminished to mere ornaments, only fritter a work otherwise both original and elegant; but no such qualities redeem the other example, over the hall that replaces the once beauteous St. Stephen's, (never, alas, to be seen again but on paper.) Its exaggerated bosses, and unvaried ribs, (poor in moulding, even to meanness,) sadly contrast with those of the crypt below, rich without fritter, and subordinated in *three* degrees.

† It has been observed, that the back or keel of certain shells of the nautilus and ammonite tribes presents a perfect miniature of Gothic vaulting, with its ribs and *bosses*.

symptom of decline was the extension of these favourite ornaments from the walls, their proper place, into the vaulting;* then, as a consequence, its bosses were omitted; next, its ribs dwindled, till they at length became mere divisions between shallow panels;† and, while architectural statics was achieving its master-piece in the conoidal vaulting, the *art* sunk so low as not to know how to adorn that master-piece. Pendents must supply the place of the rejected bosses, and in these the science of the masons outwitted itself; and this singularly ingenious fraternity at length, as Dr. Robison observes, "becoming the dupes of their own ingenuity, were fond of displaying it where

* The first example of which, perhaps, is Wykeham's mausoleum at Winchester, certainly not designed by himself.

† Having written the above in ignorance of an excellent essay on the Gothic vaultings by Professor Willis, I omitted as unimportant, one change which he shows to be of the utmost importance. It relates to the position of the *middle plane* of each rib, or that plane on each side of which the mouldings symmetrize. In *groin*-ribs and *formerets* this plane of course coincides with that of the *arch* which each pair of such ribs forms, and is therefore a *vertical* plane. It is also vertical in the *ridge*-ribs and *tiercerons*, for though each pair of tiercerons forms a leaning arch, each by itself is half an ordinary vertical arch. But when we come to the *ramified* ribbing (as in the Winchester example, p. 183,) a doubt may arise as to the *branch*-ribs (called *liernes* by this author,) whether their middle planes should be vertical or perpendicular to the vault-surface. The first was the method used in this and all earlier examples, and was undoubtedly the true one; a rib (like a beam) being best placed with its greatest depth vertical. But this did not permit the rib-mouldings to meet and *mitre* into each other, whence the necessity for bosses at every junction. A desire to dispense with these, or else to imitate the miniature model vaultings of the shrine-work artists, (cut in solid stone,) led to the other method, that of making all rib-planes normal to the vault-surface; which was a falsehood as regards the *branch*-ribs, which were now no longer in equilibrium, and were reduced from supports to ornaments. The mitring led to the *panel* treatment of vault decoration;—this to the absurd archlets;—till at length, (in most of the conoidal vaults,) the ribs, or rather *representations of ribs*, being merely carved in relief, were useless, and the whole became as false as the façade of a modern building decked out in sham construction.

not necessary,"—a display which brought upon both their fine and useful arts that contempt and neglect, from which the former alone—in widowed helplessness without the latter—is even now, after three centuries, hardly beginning to emerge.

II. *On the general plans.*—Before proceeding to examine the other parts of the Gothic system, it is necessary to glance at the peculiarities of its buildings in general plan and outline. These, though all derived from the well-known basilica, will be found to present many differences rather depending on *place* than time. There have been plans peculiar to certain countries and even provinces; and these peculiarities seem to have maintained their ground for centuries, unaffected by the changes in decorative style. Thus the churches with two chancels, and those with a transept near each end, are peculiar to Germany; those with two transepts near the centre, to England; and double or dipteral aisles are a southern feature hardly to be found north of Paris. So also the apse, (*i. e.* semicircular or semi-polygonal termination,) which was always universal, or very nearly so, on the Continent, is rather an exception than a rule in England; while the central tower or lantern, so generally and largely developed in England and Normandy, hardly occurs in the rest of France. Towers detached from the church are almost confined to Italy; and pairs of towers in the rentrant angles (a very beautiful feature common over eastern Europe) hardly advanced west of the Rhine.

Some Eastern peculiarities of form, as the square and short cross plans, were introduced by Greeks into the Adriatic side of Italy, but spread no further, because the Romish ritual involving processions required lengthy churches, avenues, and aisles. No such reasons, however, can be given for the other local peculiarities of plan, which must be referred to the peculiar tastes of different nations.

The inventive fancy of the Germans seems to have led them to try, during the Romanesque period, every possible combination of form consistent with great length and the cruciform

plan; or else the durability of their stone has preserved to us a greater number of these early experiments in Germany than elsewhere. Several of the oldest churches of Cologne, (St. Mary in the Capitol, St. Martin, and the Apostelnkirche,) as also St. Quirin, at Neuss, and the noble early pointed church at Marburg, present a plan which, though classed among Latin crosses, seems to form a link between them and the Greek. The latter term is applied to a cross with all its limbs nearly equal, and generally very short, while the form now spoken of has *three* limbs equal and similar; but the fourth, which forms the entrance, is considerably lengthened.* This form is exceedingly uncommon away from Cologne, though it is the plan of the two greatest cathedrals of Italy, (that at Florence and the modern Vatican,) having arisen in

* All lengthy crosses are called Latin. There are several varieties arising from the gradual lengthening of the eastern or chancel limb, which, from being at first the shortest, became at length in some English examples the longest. We may distinguish, 1st, the original Latin cross, resembling a crucifix, the limb of entrance being the longest, and that opposite the entrance the shortest. The grandest example is the cathedral of Pisa, and this is also the form of the *clerestory* in the ancient basilicas; but their numerous aisles fill out the nave to an equal breadth with the transept, thus obliterating all cruciform appearance in the ground-plan. The second kind of Latin cross is that described above, formed by lengthening the chancel, and making both it and the northern and southern arms all similar. 3rdly, The beautiful symmetry of this plan was destroyed by still further lengthening the eastern limb, though still keeping it shorter than the nave. Examples are abundant in every country: the greatest are Milan and Rheims; in England, Ely and Norwich. 4thly, The symmetry was restored by making the eastern and western arms equal, as at Amiens and Salisbury, (see p. 200,) the spires of which are in the centres of their length as well as breadth. This is the commonest Gothic form, but its symmetry of plan does not appear in the side view, because of the low chapels forming the east end. The continuation of the clerestory to the extreme end seems peculiar to England, and is very rare in large buildings: Ely, Lincoln, and York cathedrals are examples, but at the latter the eastern limb is rather longer than the western,—a defect common in the English double-cross churches.

the latter case from the addition of a long nave to what was originally intended to be a Greek cross. In all these cases the three short limbs are either terminated by, or wholly consist of, three apses.

Many of the Romanesque churches of the Rhine present an extension of this plan by forming a cross of this kind at *each* end of a long nave, of which the finest example is the Apostelnkirche. Hence arose the German double cross, very different from the English, (see p. 200,) and resembling rather this figure, ‡. The two transepts, however, were never alike: one of them, generally the western, has square ends instead of apses; frequently both are square-ended, but the extreme ends of the building were in many cases, as at Mentz, both apsidal, forming two chancels, and admitting of no entrance in the axis of the building, but only in its sides, (as at Worms and Oppenheim,) or on each side of the western apse, (as at the very curious abbey of Laach.)

In later buildings the western apse was omitted, but the eastern always retained, and occasionally it was flanked by two minor apses projecting from the eastern sides of the transept arms. This arrangement occurs in France at Rouen cathedral, and in England at Romsey, Hants; but in Germany it seems common, the best known examples being Laach, Andernach, and Gelnhausen. In the latter, the side apses are carried up to form towers. This triapsal plan, far inferior in beauty to that above described in the Cologne churches, arose from the then newly-introduced custom of *orientation*, or placing every altar against an eastern wall; whence also the practice of giving transepts an aisle on their east side only, destroying the symmetry of their end façades, as at Salisbury, (p. 202.)

Sometimes a transept projected so little as to appear only in the clerestory, and not to affect the ground-plan, as is the case with the lesser transept at the abbey of Heisterbach, and the only one at Freiburg minster, both of the Transition or earliest Pointed period. Both these transepts, however, are lower than the clerestory, though higher than the aisles, which

is a great detriment to the unity of the building. The transept of Notre-Dame at Paris, and the lesser one at York, are of the same kind, but, being as high as the main building, are free from this objection.

The German Romanesque churches are not more remarkable for these varieties of plan, than for similar complexities of outline produced by their numerous towers, amounting in some cases to *six*, and at the small cathedral of Limburg to *seven*. The crossing of each transept had usually a low square tower concealed by the roofs; four arches thrown across the angles of this, served to support the oblique walls of an octagonal lantern rising above the roofs, and terminating internally by a cupola, externally by a pyramidal roof, pitched at an angle of 60°, or more. The western tower, however, (whether placed over the crossing of the west transept, or at the extreme west end,) was usually without an octagon, and ended in a *square* pyramidal roof, the sides of which correspond to the angles of the tower, and, by intersecting its sides, form four high-pitched gables. This form of tower-roof is a striking characteristic of the older German churches.*

Small towers or turrets were placed in pairs, first, near the east end only, as at the Apostelnkirche; then near both ends, as at Speyer, Mentz, and Laach; and finally, at the west only, as in most Gothic churches, where they assume greater importance, and become (at least on the Continent) the principal towers both for size and height. When there were two towers at each end, the two pairs were always varied in form, height, and distance asunder. Thus, at Laach, the *octagonal* eastern lantern is flanked by *square* towers, and the *square* western one by *octagonal* towers: the latter are placed as far apart as possible, viz. at the extremities of the western transept, while the former are as near as possible, viz. in the eastern

* According to some engravings it seems to be in some cases octagonal, with an angle over each angle of the square tower, but they are often unintelligible or irreconcilable. Even in Möller's fine work there are discrepancies in this respect. (See his Plates of Limburg cathedral.)

rentrant angles,—a position common in the oldest German buildings, and which gives to the eastern view of the Apostelnkirche a Byzantine and almost mosque-like character. All these towers terminate in pyramids or spires.

The seven towers of Limburg consist of a central octagon and spire, two large square western towers, with gable pyramids,* and four slender ones of the same kind, at the extreme corners of the transept,—a rather unusual position. Such towers, however, occur in the great Gothic cathedrals of Rouen and Rheims;† and there is good evidence that they formerly existed in the Saxon transept ends of Winchester, but were removed probably in the alterations of 1079. Historic mention is made of a tower or towers also at the east end of that immense Romanesque pile, which must have been hardly inferior to that of Speyer.

There are also instances of pairs of towers so attached on each side of the church as to form themselves a transept. This occurs sometimes at the west front in all countries, as at Rouen cathedral, Lincoln, and Wells. Again, two buildings on the extreme confines of the Gothic sway,‡ perhaps the easternmost and westernmost examples of pure Gothic, agree in one great peculiarity. Exeter and Vienna present instances

* A convenient name for the form of roof above described.

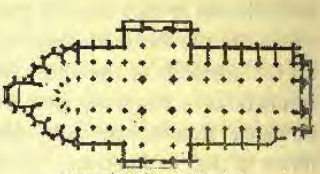
† These towers possess, both at Rouen and Rheims, a peculiar and rather elegant character. They rise no higher than the main roof, are less ornate than the rest of the building, and have each face occupied by one lofty unglazed window, or open arch, divided into two lights by a very slender shaft.

‡ The geographical range of the Gothic style cannot be very exactly defined, owing to the habit which eastern travellers have, of calling every thing that contains a pointed arch, Gothic. It seems, however, to extend as far S. E. as Corfu, or perhaps Rhodes, and N. W. to Ireland; N. E. to the Baltic Isle of Gottland, and S. W. to the oceanic isle of Madeira, where the extravagantly debased niches of the cathedral of Funchal furnish (in the first modern colony) the last expiring effort of mediæval art; geographically placed between two worlds, it seems fitly to stand between two historical epochs.

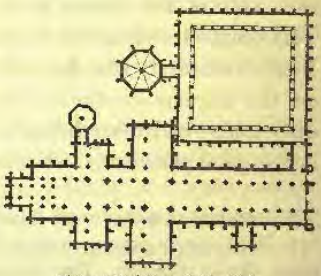
of the only transept being formed by two towers built against the sides of the church.

The Gothic buildings of *France*, though more magnificent, present less variety of form, and far less *external* beauty, than those of either Germany or England. Their comparison with the latter shows some great differences in general design, which we will endeavour to trace.

The year 1219 is remarkable for the foundation of two cathedrals of the largest class, one remaining the most complete, and in many respects finest, in England; the other, though much patched and altered, still, on the whole, the most splendid in France. As these buildings further correspond within a very few feet (perhaps intentionally) in each of their extreme dimensions, viz. length of body and of transept, and height of spire, they are admirably calculated to display the international differences, especially those relating to general form, to which we are now confining ourselves.



Plan of Amiens Cathedral.

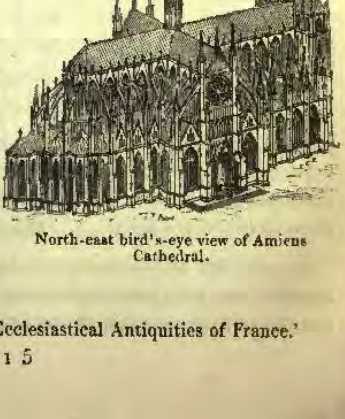


Plan of Salisbury Cathedral.

In comparing the plans of these two buildings, we perceive that though corresponding so exactly in extreme dimensions, yet Amiens is designed on considerably the larger scale, *i. e.* what may be considered the *module* of Gothic architecture, viz. the width of the *severy*, or as the French call it, the *travée*, is greater. Hence it has fewer parts than Salisbury, and, being measured by a larger scale, necessarily appears *less*. In the circuit of the English building, we find seven different façades or ends, in the French only three, and a similar differ-

ence in the number of severies of side enclosure. In the clerestory, where such comparisons are most easily made, Salisbury presents six fronts and sixty flank compartments, Amiens only three fronts and thirty-nine compartments. Whittington* was so deceived in this manner as to call Salisbury "a much larger church altogether;" and indeed, whether in walking round its exterior, where (from the skilfully rounded outline) angle after angle, and front after front, discloses itself, or in wandering through the many avenues and colonnades of its interior, one can hardly be brought to believe that it covers no more ground than the one colossal room at Amiens, and has hardly half its internal capacity. But the interior *coup d'œil* of the latter is, doubtless, far more imposing, and strikes at first, not so much with an appearance of vastness, as of noble simplicity and majesty, which though commonly attributed to fine proportions and style, really arises rather from greatness of scale, which, though not observed as such, will yet *tell*, in producing an effect, as Whewell observes, "so different from that of smaller buildings," (*i. e.* those designed on a smaller module,) "that it may well be termed magical."

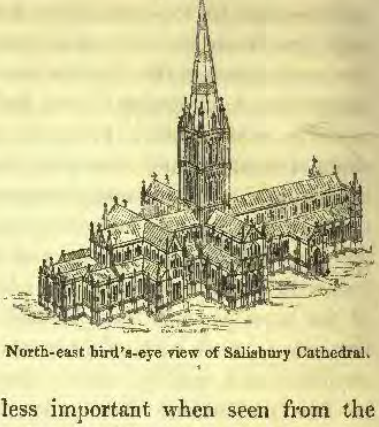
But in the French building every thing is sacrificed to this interior effect, and the exterior has the sole merit of hugeness, made more huge by its shapelessness. The extravagant height of the vaulting requires a vast scaffolding of flying buttresses to prop it up; the transept scarcely projects beyond this inextricable maze of props; the western towers, though



North-east bird's-eye view of Amiens Cathedral.

* 'Historical Survey of the Ecclesiastical Antiquities of France.'

some of the highest in existence, scarcely rise above the roof:* and the central spire, seldom found in French churches, and here only of wood, is too slender to break the outline of this shapeless colossus. Though rather higher than that at Salisbury, it is not, as there, the main feature, giving unity to the whole, but a mere ornament, —in the near views an overgrown pinnacle, being of course far less important when seen from the ground than from our imaginary aerial station.†



North-east bird's-eye view of Salisbury Cathedral.

But apart from the contrast of outline, these buildings

* We have represented the southern tower as complete: it remains unfinished by about half its highest story.

† The following appear, from the best authorities, to be the extreme heights from the outer ground-line, of the most remarkable *buildings*. *Framed* structures, as this of Amiens, are not included, and all are reduced to English feet.

I. Built over the centre of a church.	feet.	II. Built up from the ground.	feet.
Beauvais (steeple), *fallen*, about	455	Strasburg (steeple)	452
St. Peter's (dome and lantern)	452	Vienna (steeple) about . . .	450
Salisbury (tower and spire) .	400	Landshut (spire) about . . .	450
Florence (dome and lantern)	368	Antwerp (steeple)	403
Milan (lantern and spire) . .	367	Chartres (spire) about . . .	400
St. Paul's (dome and lantern) .	365	Cremona (tower and pyramid).	396
Invalides (ditto, ditto) . . .	328	Freiburg (open spire) . . .	380
Norwich (tower and spire) . .	310	Brussels Town-House (steeple)	364

Beauvais fell after standing only twelve years; and St. Peter's and Salisbury have been preserved only by the skill of the greatest architects, and stand by the assistance of iron bandages.

exemplify the two opposite principles of the sublime in architecture,—*magnitude* and *multiplicity*. The latter seems ever in England to have been preferred to the former: it was just the reverse in classical antiquity. The Greek style does not even admit of the principle of multitude. The largest temple was not indeed a magnified model of the smallest, but the increased scale was only rendered appreciable by the relative minuteness of some of the details (Doric annulets, for instance, of which there are three in small buildings, and five in the largest); still the largest temple might have served as a model for the smallest, provided its details could be executed small enough. So also a miniature model of Amiens, Ulm, or one of the great Italian duomi, would make a not inconvenient parish church; while a similar model of Salisbury or York minster would be totally useless. The English taste still prefers multitude to magnitude; and English æstheticians alone have made the discovery that a church may be finer divided by screens than open. They have even regarded multiplicity as a Gothic principle; when, without going abroad, the Cambridge chapel might have shown them that this style has the advantage (over the Classic) of being applicable (perhaps equally) to *either* method of grand building.

Of the relative merits of these two opposite principles, as applied to secular buildings, there may perhaps be a doubt; but the question can hardly be asked which is fittest for the temples of a monotheist religion. That the Pagan temples should present such far greater unity than the Christian ones, may appear at first strange, but is easily explained. In ancient Greece, notwithstanding its 30,000 deities, each temple was inviolably sacred to *one* alone; whereas, in mediæval Christendom, each minster contained the separate altars of a whole host of saints. Were it not for differences of climate, we should be far less likely to find the requisites for a Protestant church in these buildings, than in temples, or at least mosques.

On referring again to the plans, it will be seen that the nave at Amiens is remarkable for having its buttresses *within* in-

stead of without. This (though not there part of the original design, but produced by an alteration,) is yet highly characteristic of the French churches, and illustrates also an important principle in Gothic construction. As the vaultings of this style were contrived to collect the whole pressure of each compartment into four single resultants, they rest wholly on the points of springing, viz. the pillars and buttresses, leaving the walls so completely unloaded, that they are required only as enclosures or screens, and might be entirely omitted or replaced by windows, which indeed is often the case, except within a few feet of the ground. Indeed, the real *supporting* walls are broken into narrow strips, placed at right angles to the outline of the building, and called *buttresses;* which, being presented edgewise to the interior, enabled the architects to produce that greenhouse-like transparency, so directly opposed to the notions we attach to the very name of a vaulted or fire-proof building. As the *enclosing walls*, then, are not those of support, they may be placed where we please; and the French builders, by removing them from the inner to the outer edge of the supporting strips, gave to the interior those deep recesses, which in England serve only to produce external play of light and shade; thus again sacrificing external to internal effect.*

Again, the polygonal apse, with its clustering sub-apses, so characteristic of the French Gothic, denotes another sacrifice of the same kind. Of the superior internal effect of the apse, compared with the square end, there can be no doubt. It connects the converging perspective lines by a graceful sweep, multiplies the vertical lines, greatly shortens the horizontal ones, and thereby makes the building appear loftier in proportion to its breadth. The ancients were so well aware of these advantages, that they adopted the apse in all their later works without exception (as in the basilicas and the temples at Baalbec and Palmyra); but they did not allow it to appear externally, well aware (like our English ancestors) of the

* The buttresses of Amiens nave are extended outwards beyond their original limits, to enlarge these recesses sufficiently to serve as chapels.

greater expression of power and stability in rectangular forms. Let any one compare the eastern views of Salisbury with those of St. Ouen at Rouen, (both much alike in size and pyramidizing outline,) or with Westminster abbey, which, in this as well as many other respects, conforms to the French type. They will find that the cathedral (though really far from being a massive* building) presents, from its exclusively right-angled plans, an expression of strength and repose almost classic, which we may seek in vain in the poly-apsal buildings, whose numerous oblique angles destroy all apparent strength by reminding one of folding screens rather than stone walls.

The greater number of compartments at Salisbury than at Amiens is also characteristic of our national tastes. In England, the nave of a cathedral had usually ten or twelve compartments; abroad, only five or six. The English transept almost always advances *four* compartments in the clerestory, or *three* in the ground-plan; the French only three in the clerestory, and as *two* of these are required to clear the aisles of the main building, (which are either dipteral, as in Amiens choir, or accompanied by buttress-chapels, as in the nave,) there remains only *one* compartment of transept projecting outwardly; and even this compartment is often by a strange perversity made narrower than the rest.† At Paris and

* According to Ware ('Tract on Vaults'), its supports occupy $\frac{1}{5}$ of its plan, while those of the Cambridge chapel occupy $\frac{1}{4}$; those of St. Paul's, $\frac{1}{6}$; of St. Peter's, at Rome, $\frac{1}{7}$; of the Pantheon, the same; of the Invalides church, at Paris, $\frac{1}{8}$. On the other hand, he gives this ratio in the Parthenon at 1:5·5; in the Temple of Peace, 1:7; in St. Geneviève, the same; and in Sta Sophia, only 1:8. Such comparisons are not fair, because they do not take height into account. A comparison of the whole internal with the whole external capacity of the stone-work, omitting roofing, would give some interesting results.

† It should have been so narrowed in our plan of Amiens. It seems to have been a rule, that the whole length of the transept should not exceed that of half the main building. Perhaps the finest French transept is that of Rouen cathedral. Its division into compartments is quite peculiar, and well worthy of attention; there being three on each side of the crossing, the inner of the three corresponding with the nave aisle, the

Orleans, indeed, the aisles being dipteral throughout, besides having buttress-chapels, the whole projection of the transept is swallowed up, and does not appear on the ground-plan.

We should observe, that the churches of Normandy (especially the three magnificent ones at Rouen) approach the English rather than the French type. They exhibit our lengthy proportions, (every other dimension seeming sacrificed to lineal extent,) our strongly marked transept and outer buttresses, and our great central feature predominating over the western towers, which in France were generally the principal ones. Normandy seems always to have formed architecturally an English province; and the observer who goes from Westminster to Rouen, goes from a French building to English ones.

Too much stress is often laid on the greater proportion of height to breadth in the French Gothic avenues.* This is

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outer equal to it, and the middle one of each arm wider than these, but not so wide as the main crossing.

* The following are the clear breadths and heights, in English feet, of the most remarkable vaulted avenues.

Date.		Breadth.	Height.	Proportion.
Tarquin I..	The Cloaca Maxima	16	26	1 : 1·625
1st century.	The Temple of Peace (now ruined)	83	121	1 : 1·46
2nd or 3rd.	The Second Temple at Baalbec	63	93	1 : 1·47
11th	The Cathedral of Speyer	45	107	1 : 2·35
13th....	——— Salisbury	35	84	1 : 2·3
	——— Amiens	42	147	1 : 3·5
	——— Cologne	41½	145	1 : 3·5
	Westminster Abbey	33	99	1 : 3
14th....	The Nave at York (*not vaulted*)	46	92	1 : 2
	——— Milan	55	165	1 : 3
	The Choir at Beauvais	48	167	1 : 3·5
15th	Chapel of King's College, Cambridge	40	80	1 : 2
16th	Cathedral of Florence	55	140	1 : 2·54
17th....	——— St. Peter's	84	147	1 : 1·75
	——— St. Paul's	41	82	1 : 2

Thus St. Peter's has just the same internal height as Amiens, but just *twice* its breadth; and yet both are considered well-proportioned avenues

not a general feature; the great majority of such vistas, in all countries alike, having the height equal to twice the breadth. A higher proportion is confined to buildings of the largest class; for the larger they are, the greater may this proportion be without appearing excessive. In England, the chief instances of a proportion higher than the double breadth are at Salisbury, Winchester, Canterbury, and Westminster, which is our loftiest building, both absolutely and in its relation to the breadth, which is as 3 to 1. In France, the same ratio is found in the largest buildings, and is not exceeded either in Rheims, Chartres, Paris, Orleans, or Rouen cathedral; but the neighbouring St. Ouen, and the colossal Amiens, have the ratio of $3\frac{1}{2}$ to 1, which (especially in the latter) does not appear too great. St. Wulfram, at Abbeville, seems to a have a still loftier proportion, or else, not being on a particularly large scale, this proportion is felt to be excessive.

It might be supposed that the introduction of arching, by enabling *wider* spaces to be covered than by lintels, while at the same time it required more extent of abutment (for the same width of span), the higher it was raised above the ground would for both these reasons have led to openings of a lower and wider proportion, both in windows, arches, avenues, and entire buildings. But this was not the case, at least not in ecclesiastical buildings, the designers of which continued to be fully alive to the majesty of tall proportions, even when obtained at the expense of space and convenience; and they never, till the latest period of the style, admitted archways for any purpose, great or small, lower than twice their breadth. This was also the proportion given to *single* openings by the classical ancients, not only in doors and windows, but in distyle porticoes (as those of the Tower of the Winds). But it seems to have often escaped notice, that in both systems the placing

in their respective styles. Beauvais (*doubling* the height of the vaults of Salisbury or St. Paul's) may well be called a 'church in the air.' Our authority for this height is Ramée. It certainly strikes the eye as *much* higher than Amiens.

of several openings side by side (at least externally) renders a taller form necessary, and this in proportion to their number. A tetrastyle portico formed simply by the extension of the distyle, would be low and squat; it requires to be nearly square in its general outline, *i. e.* the height of its openings must be about thrice their breadth. This is also the case with the three-arched front of Peterborough cathedral, and with nearly all three-light Tudor windows. A hexastyle portico requires the columns to be placed still nearer than a tetrastyle, as appears plainly from comparing the two porticoes of the Erechtheum. But two columns taken out from either of these, especially the hexastyle, would be quite inapplicable as a distyle porch, the opening being much too narrow. So also with the windows called the 'five sisters' at York, each of which would be too tall if placed alone, or even in a triplet.

The prevailing fault of the English Gothic is lowness of proportion; but this is not so hurtful in the form of vistas or avenues as in that of mere openings, as arches or windows. Lowness of a whole interior may be well disguised by the use of the apsidal termination, divided into narrow compartments, of which St. Jacques at Liege is a skilfully managed example; but nothing can atone for the low-proportioned openings so common in the smaller English buildings, and which even found their way into some of our cathedrals, especially Exeter, though built in the period of the purest complete Gothic. In this style, openings lower than the double square utterly destroy all majesty of expression. *

* As it seems to be a rule of fate, that whenever copyism usurps the place of thought, all the defects of the style copied shall be reproduced and exaggerated, and all its beauties suppressed,—it generally happens that the modern Gothic, instead of combining (as every new style has done) the beauties of several old styles, only combines their faults. Thus the peculiar glories of the English Gothic are forgotten, but its peculiar defects are cherished as something national. None attempt to revive Gothic England's boast,—her vaultings; but all try how much timber they can waste in a meagre imitation of Gothic England's shame,—the

The whole internal proportions of Amiens are so admirable, that this model was closely followed in two other immense edifices, each intended to have exceeded every human work, but, after centuries of labour, left not half complete. Beauvais remains a choir and transept only; Cologne a mere choir. The first of these glorious fragments, while preserving the proportions of its model very exactly, exceeds it in scale by about one-sixth; while Cologne would have been, internally, almost a copy of Amiens, all the modular dimensions differing only by a few inches. The German cathedral, however, besides the advantage of a more complete style, would have had a strongly marked transept, advancing *four equal* compartments each way, as in England, a stone central tower and pyramid of a breadth proportioned to the building, and two colossal western towers and spires as high as its whole length, and so adjusted that a straight line might be drawn from their summit, touching that of the central lantern and of the east end, as at Ely. This building, if completed exactly according to the design, would certainly eclipse all others of every age, country, and style.

The duomo of Milan, the greatest completed Gothic structure of Italy or perhaps the world, also closely follows Amiens both in proportions and scale, the chief alteration being that of placing the transept nearer the eastern than the western end.

The buttress-chapels (or else double aisles) of the continental churches called for modes of roofing different from that familiar to us in England. Instead of one *longitudinal* lean-to or semi-roof, there is commonly a separate and complete roof over each compartment, but extending *transversely* over both the inner and outer aisle, and terminating both ways in hips. Such

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extravagant and utterly un-Gothic open roofs. Few will learn from the Continent to make openings of a majestic proportion; but many are ready to import such vagaries as the '*discontinuous impost*:' and one dreads at every new church to encounter the horrors of German interpenetration, from which I believe we are only saved by its expense.

is the case at Cologne, and at the nave and apsis of Amiens (see view, p. 201); but in the choir they terminate outwardly in gables,—an arrangement which seems more consistent than any other with the Gothic principles. The superb church of St. Ricquier, near Abbeville, presents a singular modification of this. Instead of each roof covering a compartment, it covers two half-compartments, making a gable over each buttress, and a gutter over each window.

As these modes of aisle-roofing do not abut against the central building, they do not necessarily lead to a triforium; and the clerestory windows might be continued quite down to the cornice over the aisle arches. Such is, in fact, the case; but the architects, wishing to retain a kind of triforium, formed the lower part of these windows into a very narrow one, not lighted from within, as with us, but admitting light from without. These galleries are formed, as it were, in the thickness of the wall,—if that can be called a wall which consists only of two fairy-like arcades,—the outer glazed, the inner left open. The shafts of both are of the utmost slenderness, having nothing to support but the walk above, open to the exterior, and the glass of the clerestory window; and hence there is no wide arch spanning the whole compartment, or at least half of it, as in English triforia. While the *blind* triforium at Abbeville, with tracery and parapets varied in each compartment, is exquisitely beautiful, these *luminous* triforia at Cologne, Amiens, Beauvais, and St. Ouen, by admitting light where we commonly see solid wall or dark openings, produce an effect our Gothic never reached.

Dr. Möller observes, that the Gothic churches of Hesse are mostly without clerestories, but does not say whether their outer roofs all resemble that at Marburg,—an interesting question, as this kind of building (which has its own peculiar style of beauty, and is well adapted to modern wants) is very variously roofed in different countries. At Vienna, one enormous high-pitched roof covers all three avenues, and gives the form of a barn, with more roof than wall. At the east end

of Salisbury, a similar roof, but with a moderate pitch, below 45°, is skilfully adjusted at the end to fit three acute gables,—an example well worthy of modern imitation. The more general English method was by three distinct longitudinal roofs, (as at the Temple church,) leaving the intermediate gutters to be choked by every fall of snow. At Marburg, the aisles are covered by transverse roofs over each compartment, originally (now over each pair) proceeding from the central roof and terminating outwardly in hips.

In the foreign dipteral churches, whether with the outer aisles open or divided into buttress-chapels, these parts were commonly of the same height with the inner aisles. Milan and Beauvais present exceptions to this. They have what may be called a double clerestory, the inner aisles rising above the outer aisles or chapels, and having windows above them. At Milan, the outer aisles are so disproportionately high, that these two clerestories, which are exactly equal and similar, are reduced to a very poor altitude; and the compartments being very broad, the vaulting leaves room in each case for only a very small window under its crown, *i. e.* in the centre of each wide compartment. Thus these two tiers of thinly-scattered holes admit only just light enough to destroy the unity of a building with five avenues of equal height; and this famous duomo has neither the beauty of the common Gothic nor of the Hessian arrangement, but the disadvantages of both, with neither the airy clerestory nor the palm-like combination of pillar and out-branching vault-ribs, which is peculiar to buildings without clerestories. But how differently is this managed at Beauvais, which, though the loftiest apartment ever built, is yet made by its numerous stories, and their skilfully-contrasted inequalities, to appear both inwardly and outwardly loftier than it really is. For within we find, first, the enclosure walls of the outer chapels, then their lofty windows; above their vaulting a small blank triforium, and then the moderate-sized aisle windows; again, (above the aisle vaulting,) the great transparent triforium, and then the immense

clerestory, with windows longer even than those of the outer tier, and at least ten times the height of the first blank triforium, which yet is (or seems) high enough to form a gallery. A dimension is not increased in appearance by division into *equal* parts, but only into *unequal* ones well contrasted. It is very doubtful whether the uniform repetition of columns, windows, or other features, adds to apparent length; but the unequal divisions of length formed in a Gothic church by the vestibule, nave, crossing, chancel, &c., give artificial length, and the unequal stories give artificial height, while the *equal* stories of a factory produce no such effect.* This principle of contrasted division is important in the composition of mouldings. In good cornices we never find two members of equal or nearly equal height together, nor should two conspicuous members *of the same kind* be nearly equal, even though separated by numerous members of a different kind. Alternation is as bad as succession of equal parts. There must also be a fixed limit to the principle of contrast where it begins to interfere with that of multitude. There must be a certain disproportion between two divisions which should not be exceeded, because then the larger division would appear greater, divided into two, than entire. What is this limiting ratio? An examination of the finest classic examples would seem to give, for this limit, the ratio of 10 or 12 to 1. A greater disproportion than this, the eye can hardly measure or understand as a contrast. While very small differences (if visible at all) are always

* Perhaps a *gradated* division, diminishing upwards, may also give apparent height. No building, of the same altitude, appears nearly so lofty as a Doric portico; on which Papworth observes—"In the vertical subdivisions of the masses forming the columns, the triglyphs, the metopes, and the mutules, and even the ornaments above them,—the acroteria and terminations of the roof,—it is evident that great attention was paid to produce the effect of altitude, by conducting the eye from the base upward along the columns and entablature, in a succession of lines admirably proportioned to each other, and becoming shorter as they approach the summit of the building."

over-estimated, very great ones are always *under*-estimated. Good examples of contrasted division should be copied *simply as such*. They are equally applicable to the divisions of a building or of the smallest moulding, conducing alike to sublimity in the one, and beauty in the other.

The chief peculiarity of general form in the *English* Gothic, viz. the eastern minor transept, so finely developed at Salisbury, has been called an "useless excrescence;" but it certainly, by the principles of contrast and multitude, adds to the apparent extent, and externally conduces not a little to variety and beauty of outline. We may account for its origin, however, thus:—In cruciform churches there were two modes of placing the choir and its furniture; either in the eastern limb, which was most common, or in the centre of the cross, as at Winchester, Canterbury, Westminster, &c. This place was especially proper when there was a lofty lantern over it, as in the Italian duomi and English cathedrals, but not in the French, in which accordingly there seems to be only one example of this arrangement, viz. at Rheims. This plan had the advantage of placing the choir in the most imposing spot, where alone the whole building displayed itself in five grand perspectives,* but it had the defect of shutting out the view of the transept arms from the nave and from each other, which latter was always the finest proportioned vista in the building, because not too lengthy for its other dimensions. But the builders of Salisbury seem to have aimed at combining the separate excellences of all other models;† and notwithstanding the fine open view of the principal transept, on entering the choir we find it crossed by another transept, producing by its lateral views the same effect as in those choirs

* The fifth being the tower, which was in all these cases originally open as a lantern.

† This remarkable building combines in its varied plan every kind cross, the whole clerestory cast of the tower forming even a Greek cross of perfect symmetry.

which are central. The hint was followed more or less completely at Worcester, York, &c.

There is another peculiarly English variation on the general Gothic plan, which deserves much more attention than it has hitherto received, and which ought to render the name of Alan de Walsingham pre-eminent among the few Gothic names that have descended to us. Having to repair the cathedral of Ely, after the fall of its central tower, in 1322, he was led to speculate on the defects of this part of the Gothic plan. The four central piers require to be larger than those of the aisles, not so much for supporting the tower, as for resisting the unbalanced thrusts of the two arcades that terminate against each, about the middle of its height, and generally cause it to belly inwards. The weight of the tower is even useful in fortifying them against this effect, and renders it possible to make them more slender than if they supported no tower;* still, unless they be made too weak, or the ordinary aisle pillars too strong, the former must exceed the latter, and must therefore contract the width, either of the central or the side avenues, or both, just at the place where space is most desireable. This architect then invented the truly masterly expedient of *altogether omitting* these four middle piers, thereby at once forming a noble octagonal central space, distributing the weight of its covering, or lantern, among eight instead of four supporters, greatly diminishing the inward push on each, (because it receives the thrusts of its two abutting arches inclined 135° to each other, instead of 90,°) and, lastly, enabling these piers to be enlarged to any extent in one direction (outwards) without stopping or even contracting any one of six avenues of the church. This latter circumstance indeed was not taken advantage of at Ely, because it could not be done without interfering with the symmetrical spacing of the aisle colonnades

* Just as the pinnacles placed as loads on outer buttresses render a less projection of their foot necessary; for the downward pressure combining with the push of the vaulting renders the resultant more vertical.

already built. It must be regretted, too, that this fine octagon remains unfinished, being covered to this day by a wooden sham vault; but it must not therefore be inferred either that the Gothic builders were not bold enough to venture on a dome of 70 feet span, or that Walsingham's invention (like that of the Ionian architect * so much lauded by Vitruvius) consisted only in substituting, for an undecaying and fire-proof ceiling, a wider but perishable one. I believe these wooden vaults, wherever occurring, (as at York minster and at Boston in Lincolnshire,) are only temporary models, put up to serve as ceilings, till the permanent vaulting could be safely commenced, which (as Wiebeking observes) it never could be till several years had been allowed for the supports to settle into their permanent form. This precaution will have to be rigidly observed with modern vaulting, if it ever attains any thing approaching that extreme economy of material which the Gothic masons practised.

This invention is equally applicable to any style, or any mode of construction;† and if disposed to underrate it on account of its simplicity, we should ask, Why was it never used before? We might add, why has it never been re-invented even by the most ingenious modern architects? In looking

* Hermogenes, the inventor of the 'pseudo-dipteral' form of temple, by omitting the inner range of columns in the dipteral; thus aping its effect at a distance with only half its real splendour,—an invention quite in character with the ungenuine showiness of the Asiatic taste, and dearly bought by the necessity of substituting for the stone ceilings, timber ones, which in their decay have brought every column of these famous temples to the ground; while the porticoes of the little structure of Theseus remain, after the lapse of twenty-three centuries, still porticoes, (not ruins,) and unless destroyed, like the Parthenon (by gunpowder), may last as long as the time-defying works of the Pharaohs.

† There is a beautiful instance of its use in lintel construction in the tomb at Mylassa (figured in the 'Ionian Antiquities' of the Dilettanti Society). According to Mr. Fergusson, the same form is common in Indian mausolea. It would thus seem to have been invented thrice, in Ionia, India, and England, at widely different epochs.

over the engraved designs of Palladio, Scamozzi, Vignola, &c., it is wonderful to observe how very nearly they often approached this idea without ever completely reaching it.* Indeed, no example of it seems to have been finished out of England, either in the Gothic or Italian styles,†—and even in its native land, it lay dormant at Ely for three centuries. Of its revival, Ware says, "The octagon base, and the vista of the aisles through it, is together an invention not easily allowed even to Sir Christopher Wren." Wren never claimed it; he had native plumes enough without borrowing any. Yet, perhaps, if his uncle had not been Bishop of Ely, St. Paul's, though a fine, would not have been an unique building.

This great man, from the beginning of his career, appreciated the manifold merits of the plan peculiar to his uncle's

* It did not, however, escape those excellent geometers, the Spanish Arabs. Since writing this, I have learnt of a complete vaulted example by them, in a bath at Barcelona.

† Most modern Italian churches have the octagon space, but at the expense of the aisle avenues, which are either absent, or blocked up, as at St. Peter's. From a plan which Wiebeking saw in the archives of the cathedral of Bologna, begun 1388, it appears that the Ely octagon was proposed on an immense scale (116 feet diameter) for that building, but the cinquecentist architects were too timid to venture on it, for the wooden model in the sacristy adheres to the old method with four central piers; and neither project has suited the resources of 'Bologna the Fat,' for the nave only is built. The cathedral of Pavia, however, begun in 1489, but equally unfinished, presents the octagon half-developed, and completely so in the original design of its architect, Rocchi. It has been said that the duomo at Florence (left roofless till a council of architects and engineers from all parts of Europe assembled to consult how to cover it) exhibits the rudiment of the English octagon; but, if so, it is very rudimentary indeed. The very ancient little Byzantine chapel of Santa Fosca, on the Isle of Torcello, in the Venetian lagunes, presents a much nearer approach; but in this, as well as in the modern church of Santa Maria della Grazia, at Milan, the resemblance is only in *plan*, no advantage being taken of the octagon for facilitating the covering, which is by a dome, on *four* pendentives only, covering the whole square.

church, and when called on to repair Westminster abbey, he intended to remodel its centre on this type. Bad details and Italian cornices could well have been tolerated for the sake of such an improvement; especially needed here, not only to fit the building for its present use, (for which it is now, like most Gothic structures, singularly ill adapted,) but also to correct its peculiar defects; which are a want of monumental durability, and an irregularity in the compartments next the crossing, which in the nave are wider, and in the transept narrower, than their regular width. But this improvement remains to be made. At some future day (let us hope, of pure taste), when the hoary pile grows infirm and full of days, and not only convenience, durability, and beauty, but *safety* also, calls for it, Wren's plan will doubtless be carried out, without the faults of his details.

Disappointed here, however, Wren applied the principle to one of his smallest and cheapest buildings, which consequently (though only a plaster representation, never yet executed, as it might easily be, in permanent building) has given the narrow lane of Walbrook an European celebrity;* and when

* The just and universal approbation bestowed on the interior of this little church, renders it one of the very few modern buildings that furnish proper objects for that search into principles which it has been our study to apply to the chief ancient and mediæval models. In such a search, we cannot but observe, *first*, that of Sir Christopher Wren's fifty churches, this is, I think, the only one without *galleries*. How greatly, then, must the facility, or rather, the possibility, of designing a fine interior, be diminished by requiring a great portion (often more than half) of its area to be divided into two floors; when even this great man, in *so many* trials, did not once succeed in solving this problem satisfactorily, or so as to produce an effect approaching to that which he so easily produced, in *one* trial, when unfettered by this most odious requirement of modern parsimony. But, in comparing this church with those few only which can compete with it on fair ground,—those without galleries,—we must still admit its transcendant merit, not only as compared with those of its own style, but also with those of the purest Gothic. We may fairly challenge the production of—1st, any interior, for whatever purpose designed, which pro-

his first design for his great work was obliged, by Catholic influence, to be abandoned, (it is said with tears,) and the form and proportions of a Gothic cathedral substituted, he recurred to this arrangement as the chief source of its originality and grandeur. Strange to say, this invention, so peculiarly fitted for the Protestant temple, which requires an

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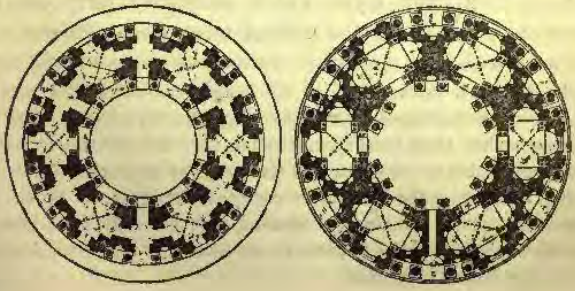
duces an equal effect with so small an amount of ornament; and, 2ndly, any interior which possesses equal beauty with as much fitness for the purpose of Protestant worship. The height being no greater than is necessary for breathing room, a division into *five* avenues was absolutely necessary to obtain any thing like a majestic loftiness of proportion; yet the number of columns does not impede the sound and sight of the preacher, because this very number enables them to be made smaller than the usual space between the heads of two persons, so that all the congregation can, without loss of space, place themselves so as to see and hear; for the pulpit and desk are so placed that, if we suppose a lamp lighted in either of them, the shadows of no two columns would overlap to form a broader shadow than that of a single one. But not only are the sixteen columns so distributed as to answer this condition, (fulfilled in hardly any other church;) they are so arranged in a plain oblong room as entirely to conceal its vulgarity by introducing the various beauties (no where else combined) of the Latin cross, Greek cross, square, octagon, and circle. Observe, too, how strictly the rectangular forms, expressing stability, are kept below: up to the entablature all is right-angled; then come the oblique lines, and the elegant circular forms above all. Wren did not (as we remarked in Chap. III.) sufficiently observe this principle in some of his works, but here its complete observance so improves the idea, that, though borrowed from a Gothic work, it could hardly be retransferred into that style without great loss; for how could the combined plans (cross, square, octagon, and circle) be kept in that style so *equally* prominent as they are here? none prevailing over and disguising the others. The cross, and especially the square, would hardly appear but for the entablature, which could not be replaced by any Gothic feature that should have sufficient importance without appearing clumsy or unduly exaggerated. Again, that style is so much better adapted to polygonal than to circular plans, that it would be difficult to keep the former from overpowering the latter.

Plan of St. Stephen's, Walbrook.

ample central space, (not lengthy avenues,) has slept again for a century and a half, and has only been revived in the elegant church just erected at Highbury.* The disuse of permanent coverings has put an end to all beauty or variety in plan.

* But while the central square of the ordinary Gothic plan is elbowed by its piers, the central octagon, on the contrary, is rather too spacious for the best artistic effect, and at St. Paul's it overpowers the other parts, making the four great avenues seem narrow and low: who would believe that they are as high as those of Salisbury? A medium, then, between the octagon and the square is presented by the early pointed cathedral of Sienna, which has its central space a *hexagon*, and, though this is there clumsily arranged, and blocks up the aisle vistas, it might by a little change have left all six avenues open and uncontracted. If the middle transept avenue occupied the western half of the hexagon, passing through two of its sides obliquely, then its two other oblique sides might each have a semi-hexagon described on it. The two outer sides of these would form windows; their two eastern sides, entrances to the choir aisles; and their two remaining sides to the east aisle of the transept, which might or might not have a western aisle, for that would fall without the hexagon. The breadths between the centres of the columns, (calling that of the nave 1), would be thus. The nave aisles $\frac{1}{2}$, diameter of the hexagon 2, the central transept $\sqrt{\frac{3}{4}}$, and its aisles $\frac{1}{2}\sqrt{\frac{3}{4}}$. The capabilities of the hexagon and dodecagon have been greatly neglected in artistic planning. Their union with square forms would produce many beautiful and useful combinations;—useful (that is) in *vaulted* and other genuine *permanent* modes of construction; the chief artistic advantage of which modes is, that they require or conduce to such combinations; so that, perhaps, elegant planning can hardly be expected, without a return to real architecture. Bartholomew draws attention to the beautiful symmetry of



III. From the general arrangement of the Gothic structures, we must now descend to their details; first premising that these appeared in a different order in different countries; all of which seem to have advanced by different paths towards the same object, which they all, about the year 1300, completely attained. Not till then did their several styles arrive at the nearest coincidence; and this only style, *common* to the various Gothic nations, is that which all have agreed to consider the *complete* Gothic, as containing all the essential features of the system, viz.: 1, Universally *pointed arching*, each arch being composed of several ribs or mouldings, so arranged that the innermost or narrowest might serve as centering on which to turn the next, on which a still stronger was turned, &c., greatly economizing the original wooden centre; 2, *Ribbed vaulting;* 3, *Apparent buttresses;* 4, *Pillar-clustering*, with reference to the ribs, each rib (whether of the vaulting or of the arches) being given to a particular shaft; 5, *Pinnacle-clustering;* 6, *Window tracery*, with subordination (of principal and minor tracery bars); and, lastly, *Foliation*, or *foiling*, an universal though seemingly non-essential ornament. These seven peculiarities may be considered necessary to constitute the complete Gothic; but some very beautiful styles arose before this complete development, by the carrying out of *some* of these principles alone; and wherever *any one* of them (especially pointed arching) is consistently observed, a beauty is derived from this consistency. All the styles which completely carry out this principle come under the general term *Early Pointed*, and

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a plan to which the vestibule of the Temple church offers a rude approach, viz. a dodecagon with its covering supported by six pillars and eighteen arches, all of equal span, dividing the whole into a central hexagon, surrounded by six square and six triangular compartments, all equilateral, and making the thirty lines composing the plan, all equal. The preceding example of hexagonal planning approaches the same idea. It represents the two stories of the royal mausoleum at St. Denys, destroyed in the first French revolution.

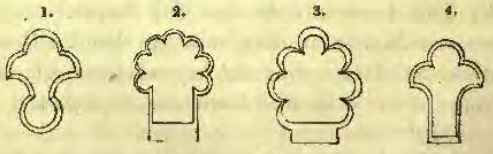
are further distinguished as *Early English*, *Early French*, &c.; the word 'Pointed' being understood. Of all these, the Early English may be esteemed as decidedly the most pure and consistent. It is not confined to England, but nearly so; its only continental localities being Brittany and the western part of Normandy. All provinces further east exhibit various kinds of Early Pointed, different from ours; and some of which were formerly supposed to display a more advanced stage, or a nearer approach to the complete Gothic, than the contemporary English examples. Thus Amiens cathedral, begun in the same year with Salisbury, certainly at first sight appears, with its large four-light windows and varied tracery, much more Gothic than Salisbury, where there is no tracery, or only the first rudimentary effort towards it. But on a closer inspection, we find that much of the Amiens tracery (as the lower nave windows and the great end rose windows) consists of after-additions: that the original windows show no greater advance than some at Salisbury (those of the chapter-house); that the remaining tracery being simply composed of foiled circles or foil-circles* packed together, is no more than what the Salisbury builders may be supposed quite capable of designing, had they possessed the desire, or the funds, for such enrichment; and, lastly, that if the *tracery* is more complete at Amiens, other features (as the vaulting) are precisely similar in both, while others are decidedly more advanced in England. This is specially the case with the arch-mouldings and pillars, which, even in older buildings than Salisbury, exhibit a richness of clustering far beyond those of Amiens, whose groups of five only, with Corinthian capitals and square

* The nomenclature of Rickman seems on this point more concise and every way preferable to that of Professor Willis, whose *foiled* arch and *foliated* arch correspond respectively to Rickman's *foil* arch and *foiled* arch, which, to any observer of Gothic buildings, seem hardly to require explanation, the former being where the whole archivolt is broken into several curves, and the latter where these are only inserted within a simple curve.

plinths and abaci, hardly indicate any advance from the Romanesque.

It is easy to conceive that the Gothic features might have appeared one by one in a different order in different countries, and that while one nation made its first advances by means of the pointed arch and vault, another invented tracery or foiling, a third began with the acute spire and pinnacle, a fourth pushed forward the subdividing of the cluster-column and many-shafted jamb. This last was the case with England, where many round-arched examples even are so Gothic in this respect that they present as many vertical lines as any building: Winchester tower, of the eleventh century, is an example.

Germany boasts of the first examples of the Gothic arch, and yet, strangely enough, was the very last country to abandon the round arch, which continued to struggle with the pointed forms, and render the 'Early German,' even down to the middle of the thirteenth century, an incongruous mixture unworthy the name of a style. In buildings with complete pointed vaulting, and all the beautiful varieties of plan and outline mentioned above, when we turn to the windows, those favourite types for recognizing the Gothic styles, instead of the beautiful grouped lancets of the Early English, we meet with such forms as these:



Early German Windows.

The foiled forms were probably introduced from the East (being common in Arabic architecture), and though the Germans were perhaps the first to use these forms extensively, it was long ere they learned their true use, not to be placed

alone, but as adjuncts to graver and more simple forms. The round trefoil arch seems in Germany to have preceded the common pointed one,* and in grouping two or more openings under one arch, they aimed at variety rather than unity in their forms. Thus, using the letters T, R, P, and *, to express pointless *Trefoil*, *Round* arch, *Pointed* arch, and foiled circle, we find such combinations as these:

R R R R T T T P P P
T T T T P P P P R R P P R R R T T T R R R * T T
pp pp

But not till later than in France or England do we find—

P P P
P P P * P P and P P
pp pp

When, indeed, the Germans did adopt these combinations, tracery of the most beautiful kind rapidly followed, and in St. Catherine, at Oppenheim, and the glorious design for Cologne (1248), this part at least of the Gothic system certainly attained its fullest development, rather sooner in Germany than elsewhere. So rapid was this development, that there is hardly an example in that country of *Early Pointed* (St. Elizabeth, at Marburg, is the chief); for no sooner did their architecture become completely pointed than it became complete Gothic.

The German Gothicists particularly excelled in the design of spires and the grouping of pinnacles, which they carried to a complexity unknown elsewhere. This feature sprung from the simple practice of finishing a square turret with an octagonal or conical spire, and then occupying the spandrils left on the plan, by four smaller spires; a proceeding as old as the tombs of the Etruscans.†

The practice of window tracery every where had its origin

* In England it does not occur till the complete establishment of the Pointed style, and is the last feature to receive a point, being the only one which remains pointless at Salisbury.

† The tomb called that of the Horatii is an example, which, when complete, must have resembled a Gothic pinnacle: and so must, on a far

in window-*grouping*, placing two or three lancet windows beside each other, and one or more foil or rosette windows above and between their heads, in order to fill out the arched cell of the vaulting, which then necessarily gave the whole group an arched outline; and this was indicated externally by a general drip-mould or label. It then became desirable to lighten the irregular masses left between the perforations, and this was done by piercing these masses, or spandrils, and

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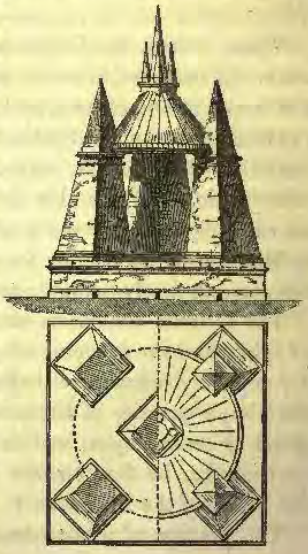
greater scale, that famous one of Porsenna, the description of which, given at second-hand by Pliny, has excited much incredulity, and led to some singular restorations. "Monumentum reliquit [Porsenna] lapideum quadratum, singula latera pedum lata CCC, alta L; inque basi quadratâ intus labyrinthum. * * * Supra id quadratum pyramides stant V, quatuor in angulis, in medio una; in imo latæ pedum LXXV, altæ CL; ita fastigiatæ ut in summo orbis æneus et petasus *unus* omnibus sit impositus * * *. Supra quem orbem IIII. pyramides insuper singulæ extant altæ pedum C. Supra quas, uno solo, V. pyramides, quarum altitudinem Varromen puduit adjicere." The height was of course marvellous to those who had heard of no building higher than the Colosseum or Pantheon. Moderns find a greater difficulty, however, in the *petasus* or cap, probably a conical roof, simply consisting of a framed ring (orbis) suspended by chains or tension-rods from the central pier. There is no need either for making it 400 feet in diameter, as Fergusson does, or, like Q. De Quincy, altering the text to get a separate "orbis et petasus" on each spire, and after all erecting two distinct monuments side by side. The annexed restoration, I believe, conforms to every letter of the text, and could be executed without a piece of stone or metal heavier than a man could lift.

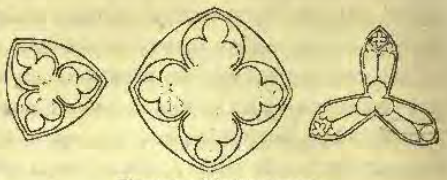


reducing the solid frame of each foil or rosette to an equal thickness all round, as if several such frames or rings were packed into one great arched opening, which henceforth was regarded as *one* window instead of several.

Each country has had its successive styles of tracery, and each has begun with the simple subdivision of one arch into two, and these sometimes into two again, filling up the space between the heads with a *circle*, as at Marburg; a *foiled circle*, as at Salisbury chapter-house, and the aisles of Cologne; or finally a *foil-circle*, as at Westminster, and the clerestory of Cologne, where it is subfoiled:* thence proceeding to pack together such forms over an *odd* number of lights, to which the method of continual bisection would not apply, as at the aisles of York; and thus the first kind, which may be called *packed* tracery, became complete. Deviations from the principle of packing led to the general tracery, absurdly called '*geometrical;*' for all Gothic tracery is geometrical, none is hand-drawn. This beautiful purely *unmeaning* tracery was succeeded in all countries by the flowing loop or leaf, and then by the peculiar national After-Gothic. Germany, however, as it had been the first to perfect, was also the last to abandon the 'geometrical' tracery, which continued there, even into the fifteenth century, our Perpendicular Period. England and France, however, in the fourteenth century, abandoned the unmeaning for the flowing leaf-tracery; and this, notwithstanding its beauty, had hardly time to show itself before it was superseded, here by the perpendicular, and in France by the flamboyant. Hence it happens that of the three great classes of tracery,—'geometrical,' flowing, and perpendicular,—while the last is, as every one knows, by far the commonest in England, the most abundant kind in France is flowing (flamboyant), and in Germany geometrical, *i. e.* unmeaning.

* *Subfoiling* seems a more concise and clear term than *bifoliation*,—employed by Willis,—which is liable to be mistaken for the practice, common in France, of dividing a flame-like form into only two foils.

The unmeaning tracery of Germany is very beautiful, and generally partakes of the packed character, the following forms occurring very abundantly. The convex-sided triangle and square are placed in all positions indifferently, and the frameless trefoils and quatrefoils are often formed on the basis of these figures instead of the circle. The foilings and subfoilings, formed by a very narrow but deep chamfered member, leave their little spandrils, (called *eyes* by our workmen,) entirely open, producing the lightness almost of metal-work.



Elements of German tracery.

Circular windows,—in England almost confined to the ends of the transept,—were employed abroad wherever a window of the ordinary form would have become of too low and broad a proportion.*

* The term *marigold* has been applied to those circular windows in which radiating mullions prevail, and *rose* to those in which no such lines are found. The preference given to the latter may be traced to the feeling for subordination of the classes of form. A general form of the third class should not be filled up with details of the second.

The finest rose windows, perhaps, are at St. Ouen, (Rouen,) and the immense ones at Beauvais, in which, however, there is not enough subordination of different classes of mullions. The finest of the radiating sort are at Strasburg, Westminster, and the south front of Amiens, where a pleasing variety is produced by the lines radiating from points a little distant from the centre, so as to give alternately a few radiating and a few parallel mullions. The figure *a*, called *pentalpha*, is very common in French circular window tracery; and they followed the example of flowers in founding their division, chiefly on the numbers 3 and 5, those divisible by 4 being comparatively rare. The term *wheel*, applied indiscriminately

Pentalpha.

Roses tournantes.

When the Gothic system had attained its culmination, the chief differences were that *vault tracery*, *pillar-clustering*, (and perhaps we may add, *moulding*,) were best developed in England; *spire design* and *pinnacle-clustering* in Germany; *window tracery* in France; and *foliation* in the Netherlands and Spain, (where it took an extraordinary richness and complexity from the Arabs, its probable inventors.) All these, however, were rather differences of degree than of kind, and the style might be said to be now every where the same.

The Gothic, then, had in the fourteenth century become a complete system, as consistent in its principles as the architecture of the ancient Greeks, to which it was yet in many respects directly opposite; and it is truly surprising to trace how by a continued steady progress in one constant direction, an originally perfect style was, through various stages of decline and even deepest barbarism, gradually converted, after almost twenty centuries, into another style as perfect as the first, yet directly opposite in many of its principles.

This opposition appears stronger, the more perfect are the two varieties of Greek and Gothic which we compare. The better each may be of its kind, the more perfect is the contrast, and the chief points of contrast are the following.

In the pure Greek, an arch was inadmissible; in the pure Gothic, a lintel or beam is equally inadmissible.

In imitative Greek, all arches have to be disguised as beams; in imitative Gothic, all beams had to be disguised as arches.

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to all round windows, would be better restricted to those called in France *roses tournantes*, which differ from ordinary roses in having the similar sectors of the pattern not alternately reversed, but all turned the same way, which gives the idea of rotation. There are many varieties of them, though none contain more than six or eight panels, there being none above the smallest scale, probably from a feeling of the instability given by their rotatory expression. Hence the use of a large and complex one, as a principal and central feature, in a church lately finished at Islington, must be considered in very questionable taste.

In the former, the props required to confine the arches must be concealed or disguised; in the latter, props must appear, whether they are wanted or not.

The severe unity of the Greek will not admit of scenery, *i. e.* decoration behind decoration. The wall behind a colonnade was plain, not even windows being admissible there. The Romans advanced a step from this by allowing two systems of decoration together, the front system of columns and entablature, the hinder of arches or windows. The Romanesque builders carried this further, and in their latest works placed arches behind arches in three or more depths. This was approaching the Gothic, in which style (and in which alone) the planes of decoration are unlimited as to number.

Lastly, looking at the general character, the expression of the Greek temple is that of majestic *repose;* that of the Gothic is aspiring *flight,* or at least *growth.* The first arises from the absence or non-perception of oblique pressures. Every thing gravitates straight downwards, and its weight seems somehow to be rendered peculiarly visible. But the Gothic arches and gables, the tapering buttresses, the sprouting crockets and bud-like finials, the bristling pinnacles and spires, all seem shooting upwards, and by their terminating all at different heights, seem aiming higher and higher; while internally the same character is preserved by arch above arch and canopy above canopy, by the palm-like combination of shaft and vaulting ribs, and lastly, by the great preponderance of vertical lines over horizontal ones, both in number and (perspective) length.

This last circumstance has, from its simplicity, been too exclusively dwelt upon, and even regarded by some as *the* Gothic principle, a distinction which it does not merit, for the aspiring character cannot be imparted by this alone; and on the other hand, this character is possessed in the highest perfection by many buildings which have (in the exterior at least) more numerous and extensive horizontal lines than vertical ones (as is the case with Salisbury); nor do the *nearly* vertical

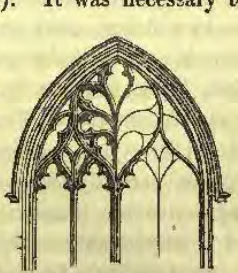
bear a greater proportion to the horizontal than in Grecian buildings, in which, owing to the diminution of the columns, &c., hardly any *truly* vertical lines occur.

Rickman, however, made the important observation, that in the complete Gothic, *every* horizontal line meeting a vertical one, either terminates or changes its direction, while the vertical continues its course unaltered. In the pure Greek precisely the reverse takes place; *all* vertical lines are stopped by the first horizontal one they meet, while the horizontal continue (generally without a bend) from corner to corner of the building. The difference therefore consists not so much in the number or extent of horizontal lines, as in the fact of their being *unbroken* in the Greek, and *frequently broken* in the Gothic. In both they are equally necessary to preserve the unity of the building, by tying all its parts together. The neglect of this, arising from the misapprehension and abuse of the 'vertical principle,' as it is called, has led in modern times to the erection of churches so totally destitute of unity, as to resemble a group of chapels of various heights stuck together.

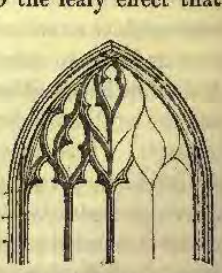
That this is not Gothic will appear by examining those Gothic structures (few indeed in number) which have been finished in one lifetime, or after one design, and escaped the unscrupulous alterations by which so many grand edifices have been reduced to patchwork. Such buildings are the cathedrals of Salisbury, Rheims, Milan, Cologne, St. Ouen at Rouen, and the celebrated chapels at Cambridge, Windsor, and Westminster. These include all the styles, and the utmost degrees of verticality, yet all possess perfectly that unity which arises from correspondence of horizontal divisions and features all round the building, and is as necessary in this style as in any other, to distinguish a great building from a group of little ones.

But the aspiring principle was liable to abuse by its inventors in the palmy days of Gothic art, as well as by their imitators now, though in a different manner. No sooner was

this beautiful tendency of the style observed, than it seems to have become the main object of Gothic design to increase and push to the utmost this expression so appropriate to a religious edifice. It was a fine idea to make *every thing* in God's house point heavenward; but to the various methods resorted to in different countries for exaggerating this expression, we must partly refer the gradual decline and fall of this wonderful style, which proceeded by different steps in each country, giving rise to what Professor Willis has happily named the different forms of *After-Gothic*. The Germans seized on the idea of *growth*, and the budding and sprouting expression; but perhaps the French were most successful in increasing the aspiring expression: by a slight change in the prevailing forms of the flowing tracery, they converted the loops or leaves into flame-like forms, till the Flamboyant buildings appeared not vegetating, as in Germany, but *blazing* from the foundation to the bristling finials. The difference between this style of tracery and our own flowing style (exemplified in the west window at York), is, that while the upper ends of our loops or leaves are round or simply pointed, *i. e.* with *finite angles*, the upper ends in France terminate, like the lower, in *angles of contact* (those formed by two curves that have a common tangent). It was necessary to the leafy effect that the *lower* angles should be tangential; but to the flame-like effect, that the *upper* ones should be so, even if the lower were finite; and hence some examples of flamboyant tracery, turned upside down, form a kind of leaf-tracery.



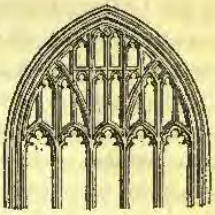
English leaf-tracery.



French flamboyant tracery.

Our countrymen, however, adopted a method which was

less conducive to the aspiring expression, and which conducted them to a style less rich and certainly less varied than any of the other After-Gothics. Erroneously supposing that an abundance of vertical lines would increase this character, they were led to convert all the flowing lines of the window tracery into vertical ones, to omit the capitals of nearly all the smaller shafts or shaftlets, thus converting what had been blank arcades into mere panels, and then to multiply, diminish, and extend these panels and endless repetition of vertical lines, over every part of the interior, and, in florid buildings, even of the exterior.



But the 'Perpendicular Style' may also have arisen from that principle of *constructive unity*, on which we have so much insisted, and according to which a style is pure and perfect in proportion to the exclusiveness with which a certain mode of construction pervades, or appears to pervade, every feature, from the greatest to the least. In Gothic architecture this mode of construction is *arching*, in other words the subjecting materials to compression alone, never to tension or to cross-strain. Hence the perfection of this style requires that no member, however short or strong, should be treated, or appear to be treated, as a *beam*.* All materials must appear (as far

* How extensively this is felt, without being expressed, will appear from the universal condemnation of a certain feature common in the Early French Pointed. The capital of a large shaft is made to support the bases of two or more smaller shafts. Now, why is this wrong, when we constantly admire a shaft bearing the pressures of several out-branching vault-ribs?—Because in this latter case all the pressures meet in the centre of the capital, which is thus subject to simple compression alone. But in the other case the little shafts exert parallel pressures on each side of the axis of the lower shaft, so that the capital

as the eye can judge) to be not only in equilibrium, but in such equilibrium as would apply to *flexible* as well as rigid bodies. Hence the apparent flexibility which every one notices in fine Gothic architecture; the stone is treated as though it were flexible, *i. e.* no dependence is placed on its rigidity, and therefore it appears to have none. Now in applying this to the chief kinds of tracery, we must remember that the statical conditions of a flexible Gothic arch require a weight concentrated on its vertex, but will not admit of any *concentration* of weight on any other point. But in the 'geometrical' tracery, the arches over the lights receive generally no pressures on their points, but concentrated pressures on certain parts of their haunches, viz. where they touch the circles or rosettes that seem packed into the window-head. Such tracery, formed of a flexible substance, could not keep its form. The flowing loop-tracery is an improvement on this, and the flamboyant still more so; but in the Perpendicular Style alone do we find a complete recognition of the principle that the Gothic arch should be loaded only on its vertex. In this style alone do we find tracery which, if converted into a flexible material, would undergo no change of form.

That the perpendicular tracery was used from this feeling rather than from false taste, will appear from that great type of perpendicularity, Henry the Seventh's chapel, in which, though the principle thoroughly pervades every other part, it is not to be traced in the flying buttresses; for here statical principles rather required the voiding to be effected by *circles* (as in the spandrils of the Pont-y-Prydd and iron bridges), and accordingly this is done. How different is the constructive consistency here shown, from the want of it in certain earlier French works, the cathedral of Orleans for instance, where the

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becomes a short beam, like the beam of a balance, supported in the middle and loaded at each end. But the Gothic principle, in its purity, admits of no beams; and this case places the universality of the principle in a strong light.

window-heads are packed with rings and rosettes, while the flying buttresses are pierced with perpendicular archlets, concentrating all their weight on certain *points* of the lower curve, against all statical propriety.

But the grand error of the 'Perpendicular' was its introduction of a graver class of form in details than prevailed in main features.

Another fault peculiar to the decline of the system in England sprung from the reduction of *panelling* (originally an excellent constructive principle, for the economy of material,) to a source of ornament merely. Common sense tells us that a panel is a method of diminishing bulk or weight without diminishing superficial extent, and is therefore only applicable to parts whose office depends on their *extent*,—whose duty is to enclose or fill up spaces; but never to those which have to support. Thus the spandrils of a bridge are proper places for panelling, but never its *piers*.* The application of panelling, however, to supports was left to the very latest examples of Gothic degradation; but for a long time previously, the principle was abused in the fan-tracery vaulting, whose ribbing and panelling was not constructive, but only decorative; the joints occurring indiscriminately in the centre of a panel, or the centre of a rib.

Other abuses overran the style in different countries, many (but not all) of which may be referred to the change admirably described by Ruskin, as occurring every where at the culmination of the style, viz. the *transference of attention from the masses* (of light or shade) *to the lines*. Thus, in early tracery, or rather aperture-grouping, the forms of the apertures alone were attended to, and not those of the inter-

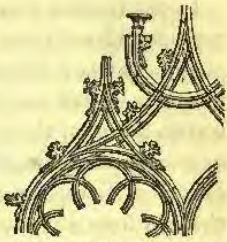
* The Dean Bridge, Edinburgh, has been celebrated as a piece of engineering (not architecture), and yet those parts are *panelled* which are meant to have most supporting power and take up least space; and those are *left unpanelled*, whose office is to fill a given space with the least burden on their supports. Such is 'common sense' building 'not pretending to architecture.'

vening stone-work. Perfection was attained, when *both* (the apertures and the mullions) were *equally* studied; and decline began, when the mullions or bars became the principal objects of design, and their wavings and flexures more attended to than the forms they enclosed. So also with shaft and moulding composition; he observes, "Those of the earlier times were in the plurality of instances composed of alternate square and cylindrical shafts variously associated and proportioned. Where concave cuttings occur [examples are given], they are usually between cylindrical shafts, which they throw out into broad light. The eye in all cases dwells on broad surfaces, and commonly [except in England] upon few. In course of time a ridgy process is seen emerging along the outer side of the cylindrical shaft [compare A and B], forming a line of light upon it, and destroying its gradation. Hardly traceable at first, it grows and pushes out as gradually as a stag's horns: sharp at first on the edge, but becoming prominent, it receives a truncation [as at C], and becomes a definite fillet on the face of the roll. Not yet to be checked, it pushes forward [as at D] until the roll itself becomes subordinate to it, and is finally lost in a slight swell [see E] upon its sides, while the concavities have all the while been deepening and enlarging behind it, until, from a succession of square or cylindrical masses, the whole moulding has become a series of *concavities* edged by delicate fillets, upon which (sharp *lines* of light observe) the eye exclusively rests."

In Germany the chief vice was *interpenetration*, or the making mouldings appear to pass through each other, instead of stopping each other.* This was at length carried to such

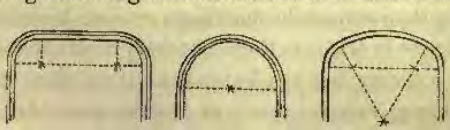
* Perhaps this arose from a fancy to repeat and exhibit every where the symbol of the *cross*. It is known that some monkish writers of that age amused themselves with finding crosses in every object of nature.

extent, that no member could stop against another, but must seem to run through and come out on the other side, even though it were in consequence obliged to be cut off abruptly in the air, giving rise to *crossed foiling*, and what has been called *stump*-tracery. Moreover, that originally beautiful and useful member, the ogive crocketed hood, became to the German designers, what the panel was to the English. It overgrew every thing else, till the buildings became covered with tracery, not of panels but of intersecting hoods, which, not confined to their three purely Gothic forms, the rectilinear, (see page 201,) the concave-sided, and the reflexed or ogive, now ran into all imaginable shapes, which, interpenetrating in all directions, gave the idea of entwined plants, an effect increased by the innumerable crockets.



Interpenetrating hoods and crossed foiling.

In France, the Gothic, in its flamboyant form, seems to have maintained a certain degree of purity longer than any where else, for the transept-fronts of Beauvais, built in 1555, exhibit hardly any instances of Italianizing tendency. Strongly marked horizontal cornices, however, begin to stop the vertical lines, and the latest French buildings free from Italian details, display a style called *Burgundian*, with the same general tendencies as our *Tudor*, but far less skilfully carried out; the arches being not only depressed but *pointless*, and the following forms, (flat-topped, semicircular, and three-centred false ellipse,) especially the first, becoming common, and their ugliness disguised in a blaze of excessive ornament.



Burgundian arches.

Every where the finishing stroke was given to expiring Gothicity by the return to beam and lintel construction, and the attempts to disguise these straight horizontal forms into the semblance of depressed arches. The loss of *constructive unity*, the return to universally *mixed* construction, (as in the Ante-Gothic ages,) completed the downfall of this, as it had before completed the downfall of the antique system.

In one respect, however, the fall of the Gothic architecture perhaps differed from that of the Classic, and was more complete. It was a fall out of which nothing could be expected to arise,—a fall not of a style or system merely, but in a certain sense, of the entire art. It was the end of a progress in one constant direction, which had run through the whole history of European architecture, quite independently of the changes from style to style,—unaffected by the Romanesque debasement of the art or its Gothic renovation. This was the progress from *magnitude* to *multitude*. Though twice attaining constructive and decorative *truth*, it is obvious that the apparatus of the art, in its second complete phase, consisted of diminished and multiplied derivatives from the chief structural members of its first phase. Even the sorry little "tobacco-pipe shafts" (as Goethe calls them) of the expiring Gothic, were the direct lineal descendants (however degenerate they may seem) of the massy columns of Karnac and Selinus, —derived by an uninterrupted process of reduction and multiplication of parts, which was the general tendency of all changes in architecture from the time of Dorus, its inventor, to that of Henry VII.,—and the Londoner who daily passes that monarch's frittered monument, or those who gaze from railway carriages on the tower of Ulm, or the sky-darkening littleness of Beauvais transept, should regard them as something more than remarkable buildings, or even landmarks, of a remarkable era in art,—as the melancholy cenotaphs of an Art, that after counting her age by centuries, had then completed her world-long career,—had, at length, *worn herself out*. The process could be carried no further: complication had

reached its limit,—in the finite divisibility of the material,—in the finite capacity of man,—and the finishers of those piles should have inscribed on them, '*Architecture is finished; henceforth be content to copy.*' The fault of what has been called improperly the '*Florid* Gothic,' was not excess of ornament. Every complete style admits of being made both too plain and over-enriched or florid. What is Lysicrates' monument but a specimen of Florid Grecian? Or what are the choirs at Ely and Lincoln but Florid Early English, florid though retaining all the lovely freshness of a young style hardly out of its infancy. But the richness of the expiring Gothic differed from the richness of all previous styles (at least all in Europe). It was not real ornament,—not artistic, or deriving its value from the amount of thought embodied. It was only a *sham* richness produced by endless repetition of the same features. The art had before, in the After-Classic decline, shown all the indescribable but unmistakable symptoms of old age,—that picturesque but graceless decrepitude so exactly opposite to the equally indescribable charm of youth; but it had never before fallen into this dotage that characterizes the After-Gothic, whether amid the blaze of Flamboyant tracery, or the Perpendicular panelling and fan-work, or the vegetating luxuriance of German hood-work. We find nothing similar to this false richness,—this unreasoning and unmotived multiplication of a few conventional forms,—except in the breaking up of the Egyptian, Hindoo, and Moorish styles, in each case seemingly a *final* breaking up.

Those who think the Gothic system fell a prey to classical pedantry, a retrograde principle, or what they are pleased to call 'vandalism,' are greatly mistaken. There was nothing forced, fanciful, retrograde or abnormal in the change from Florid Gothic to the Classical 'renaissance.' The former was not *superseded* by the latter. It had fair play, and the field to itself. It fell by its own inherent principles of decay, and left the field vacant, *before* the perceived absence of true architecture rendered the importation of a new style necessary.

Surely the most devoted admirer of the Gothic cannot turn from its latest productions to the contemporary works of the Italian school, or the subsequent imitations of them by Inigo Jones, and call the change retrograde. It is rightly named *a 'renaissance,'* though it was not *the* renaissance of architecture. *That* we admit to have taken place already, not in the sixteenth century, but in the first half of the thirteenth; that romantic and golden age of architecture, dear to the memory of all admirers of this art, when, after ages of darkness and falsehood, constructive and artistic truth began to dawn in the freshness, activity and vigour of a new system, that (advancing with a rapidity of progress to which even the present boasted progress of other arts and sciences affords no parallel) effected in one generation the mighty change from barbarous building to refined architecture; so that many who in their pupilage beheld the clumsy efforts and motiveless vagaries of the Semi-pointed and Early German, doubtless lived to foresee the glorious culmination of the new system, and to see the development of many of its wondrous beauties, if not in actual execution, at least in intended designs.

What union of efforts in one direction, what complete agreement as to principles of taste, must have pervaded the artists of that eventful age!—It is generally supposed that they formed a corporate body, who, entirely devoted to this art, and under a rigid discipline, requiring inviolable secrecy as to its principles, went with their gangs of masons from place to place, wherever a church (*or rather a monastery*) was in hand. This is an important distinction to be borne in mind. They were not the only church-builders (at least in this country), though probably the only minster-builders. Since, our fancied revival of Gothic architecture, ignorance of its *principles*, and the consequent necessity for amassing voluminous collections of *examples and precedents*, has led to the egregious error of supposing that our 9000 parish churches contain an exhaustless fund of such 'precedents,' on whose genuineness and consequent infallibility we may rely, and rest from the weary

search after truth; for, *to save ourselves the labour of thought*, is the real object of all this industrious measurement and delineation, and bustle of endless research. Now the fact is, that our old 'Gothic' parish churches are, for the most part, gothic indeed;—the work of illiterate rural masons, totally ignorant of the principles of that or any other architecture; repeating as well as they could, the mere details, empty forms or clothing, of the only architecture they saw,—that of the scientific fraternity of Gothicists,—without the remotest conception of its meaning, motive, or principles. They admired the cathedrals and abbeys, as *all* admire that which is *consistent, united, and true*, though they cannot see what constitutes the consistency, cannot discern the one motive that gives unity, cannot state the truth. Thus they admired and copied, but *did not imitate*. These 9000 buildings so precious, to be 'restored' with such care, (or as some say impossible to be restored,) display in no single instance that I have seen, an attempt at, or appreciation of, unity, simplicity, correct expression, or any one principle of sound taste (beyond mere honesty). Perhaps it may have been otherwise on the Continent, for the old village churches of Picardy and Normandy seem, as far as a very limited observation could extend, much superior, or rather a different thing, architecture instead of building;—exhibiting these principles; and generally vaulted or intended to be so. Wherever this is not the case, we rarely, perhaps never, find simplicity, constructive truth, consistency, or subordination of forms, in the other parts; and I would propose to designate all such buildings by the term *Gothicesque*, as bearing just that relation to the Gothic which the Romanesque did to the Roman; only differing in being practised not subsequently to, but contemporaneously with, its original; on account of the peculiar state of mediæval society, the monopoly of knowledge, and the jealous secrecy of the only architects.

The Gothic, throughout its career, nobly imitated nature in one particular, which the Classic system never attempted. In

the organisms of Nature, and those of the Gothic system, (but of no other,) do we find a most rigid economy of material, accompanied by no economy at all of workmanship,—often none of manual labour, but never any of mental labour. *The most lavish expenditure of labour,* (or at least of *thought,*) *seems to have been considered no waste, if effecting the smallest saving of material;* and the whole decorative system consisted in *removing superfluous matter* not conducive to strength. This unique principle, recognized in no other style, I look upon as, not indeed the most essential to Gothicity, but that most seldom lost sight of, and most extensively pervading the Gothic of various countries and periods.

A retrospective glance at the history of this system, as of every other, will show us progress, as long as the object of the artists was *Truth;* decline, the moment that object became *Novelty:*—progress, as long as minor and decorative forms were *imitated* from great structural and essential ones (but so modified as to be brought into a lower class, more curvilinear, more eumorphic, less architectural);*—decline, the moment

* This feeling was no less prevalent in the true artists of modern Italy. For instance, *balusters* (which they invented) are obviously miniature columns; but not *copied* from columns. No, they are truly *imitated,*—modified to their less structural, more decorative, station; by a sacrifice of structural to decorative fitness; *i. e.* of *statical* to mere *formal* beauty. Statical beauty is most fully developed in the Doric column, but mere eumorphy attained its perfection in the ancient *vases.* Now then, take a column and a vase reduced to the same height, and drawn on the same axial line,—and draw a third outline, whose ordinates shall every where be a mean between those of the column and the vase,—you will obtain a form fit for a baluster. The baluster (*the most successful novelty ever introduced by the moderns*), if not an invention of genius, was at least one of refined taste. It fell, however, before the popular English notion of *lightness.* Those who think a building is rendered light by the omission or utmost possible reduction of eaves and other projections (*i. e.* by giving it *as much as possible the appearance of a solid block*), think of course that the balustrade is heavier than a massive solid dado (taken from the foot of a building to be placed on the top); and looks heavier than a row of square

structural forms were *copied* from decorative ones, and whenever copying was substituted for imitation;—progress, wherever the great governed the little,—decline, wherever the little governed the great;—progress, whenever the problem was how to adorn a proposed construction,—decline, whenever it was how to construct a proposed adornment;—truth, whenever it was sought for its own sake,—falsehood, when *any thing* else than truth was the object;—truth, whenever the work was loved for its own sake,—falsehood, whenever it was got through for the pay's sake;—truth, as long as it was sought *how to lavish most thought on a given amount of work*,—falsehood, as soon as it was sought *how to effect a given object with the least expenditure of thought*.

OF POST-GOTHIC ARCHITECTURE.

It happened (from no necessity that we can trace) that the fall of Gothic art was coeval with the last great transition of human society, the most sudden of all such transitions, the change from the middle age to the modern,—from the world without printing to the world with it. The causes of the Gothic fall were, as we have said, *internal*, and must have destroyed it, independently of all external agency. It was no fault of printing, therefore; but it so happened that as printing arose, Gothic art expired.

The intervention of this discovery renders it impossible to draw analogies from what happened before, to what may happen after it. We are no longer living in the same world. Moreover, three centuries and a half do not afford experience enough in the new state of things, to permit reasoning from the past to the future. The change is hardly completed, or

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sticks, in which the opposite qualities of *flimsy substance* and the *severest gravity of form*, of course, neutralize each other, and produce sheer negation of art, by themselves; but in a composition, positive ugliness, positive *anti-art*, which is indeed what lightness generally means with us.

at least its shock and noise not over,—its transient effects are not enough subsided to enable us to distinguish clearly the permanent ones.

Nevertheless, I think we may see this,—that there can never again be such a thing as a chronological progress, culmination, and decline of pure architecture, in any form. It is true that in the transitional period, before the new state of things had established itself, there did arise in Italy something slightly analogous (but only on a much smaller scale) to the *styles* of the ancient and mediæval worlds. I allude, of course, to the three *schools* of modern (or rather semi-modern) architecture,—the Florentine, Roman, and Venetian schools; *i. e.* successions of artists, each succession pursuing a particular kind of truth, in a particular path, and manifesting a general progress, each beyond his predecessor, as that truth was approximated,—a general decline and final ruin, as that truth was overpast, mistaken, forgotten, either from novelty-seeking or (what amounts to the same thing) *ambition to display a greater individual progress,*—a greater step forward *than the advanced state of the school left room for.* This is what makes the turning-point of a school or style; for the styles of olden time were only schools on a much larger scale. Advance is constant as long as there is room for each artist to make a considerable improvement, visible to the vulgar, not so refined as to elude the public gaze. But it is obvious that as a style or school advances and gets nearer its proposed truth, there is less and less room left for great improvements, or rather for great changes; for the greatness of an improvement is not proportional to the greatness of the change. At length there is no room for great steps, but the only possible improvement is in points of detail and exquisite refinement,—in the size of a moulding, the turn of a curve,—in things that the vulgar eye cannot perceive,—in the *minutes,* not the *modules,* of the proportions of an order. Then comes the cry, 'Is architecture stagnant? Can architects do nothing but copy?' The weak time-serving artist is seduced, and breaks his allegiance to the

Truth, the Aim of the School. He will make a bold step. He will pass for a genius. *He makes a change, not for the sake of Truth, but for the sake of change.* He makes a considerable step, a step visible to all, and therefore a *false* step. The deed is done. The point is turned. The school has culminated. It is a *declining* school.

The three Italian schools exhibit a certain analogy to the three styles or 'orders' of the antique architecture, and like them, retain the indelible expression of the peculiar character, circumstances, or turn of mind, that presided at the places of their nurture. The Florentine is the *Doric* style of modern palatial or domestic architecture. Admitting of little apparent *ornament,* but any degree of real *richness,*—genuine, polite, full of thought for the spectator, with no display, no obtrusive art, always more artless the more it is studied and artificial, always appearing to contain less work both mental and manual than it really contains,—this style, even in the smallest buildings, delights the cultured eye by its truly Grecian refinement; yet awes, on the great scale, by a sublimity that only the Doric temple ever surpassed. This quality arises from the leading principles being perfectly Dorian,—severe *contrast* in principal forms, (which indeed are more exclusively rectangular than those of the Doric order itself,)—strict *subordination* of the lighter classes of form,—*powerful* masses, self-poised, without corbelling, without arching,—*breadth* of every thing, of light, of shade, of ornament, of plain wall,—*depth,* of recess in the openings, of perspective in the whole mass, of projection in the cornice. To these we must add another attribute, not much observable in the Doric (nor perhaps any temple architecture), and remarkably deficient in the other modern schools. This is a sort of *utilitarianism,* or absence of features useless to convenience or stability; an absence of sacrifice to 'architecture proper,'—I mean sacrifice of *material;*—but abundant sacrifice thereto of thought; and of manual labour an amount quite optional, this (like all real styles) admitting of great plainness, or very florid enrich-

ment. On the whole, the Florentine may be called the *common sense* school, and its importation into this country by Barry is a benefit that should atone perhaps for many failures.

Very different in principle was the school that sprung from the luxurious mistress of the Adriatic, and like its prototype, the *Corinthian* of old, soon superseded its sober rivals, having been, till within the last few years, the general model to the architecture of all transalpine Europe. Its aim was splendour, variety, luxury, pomp, and ornament,—not so much *real* as *effective* ornament. Thus it rarely contains so much carving or minute enrichment as the Florentine admits, but it has larger ornaments, constructed (or built) ornaments, great features, useless except for ornament, as inaccessible porticoes, detached columns and architraves supporting no ceiling, towers built only for breaking an outline, &c. Its decoration, instead of being collected (like that of the Florentines) into masses, contrasting with other masses of plain wall, is equally spread over the whole work. Rectangular severity gives place to curved elegance, in arches, domes, circular and oblique-angled plans; contrasts are on a smaller scale,—though more numerous, yet less obvious,—for gradation, not contrast, presides; parts are more numerous and dissimilar; the monotony of many things alike is dreaded; every thing is more complex; breadth is little esteemed, and there is danger of falling into the opposite quality—fritter. The painting styles of these two cities were not more diametrically opposed than their building styles. The description that applies to the former, with scarcely a word altered, will describe the latter. In Florence, mere eye-pleasure is foregone, variety denied, monotony endured, for the sake of grandeur and the higher objects of the art. In Venice, the higher excellences are sacrificed to the lower; true grandeur, to pompous effect; intellectual sense of fitness, to mere eumorphic beauty; the mind, to the eye; self-concealing art, to self-displaying art. No wonder that this has been (and perhaps ever will be) the *popular* style all over Europe.

Intermediate in every respect between these extreme schools (and therefore holding the same place as the old *Ionic*) is the manner of the Roman school. It is less definite, less of a *style*, than either of them, because often verging on their limits; its earlier works resembling the Florentine, and its latest the Venetian. But its intermediate and best efforts have a character of their own. Admitting of more variety (at least in general forms) than the monotonous Florentine, yet far less than the pliant Venetian, it has neither the exclusively palatial or domestic character of the former, nor the universal applicability of the latter. It is better adapted, however, to churches than to any other class of buildings. This fitness arises from the grand, simple, and *uniting* effect of one tall order, generally commencing at or near the ground, and including (or rather obliterating the distinction of) two or three stories. This colossal order is surmounted sometimes by an attic much lower than itself, but never (in purely Roman design) by another order of a size comparable to itself. Orders piled on orders are a Venetian characteristic; and in Florence, the various stories, being astylar, have nothing to unite them into one. Thus the Roman is evidently the only school that makes a high building appear a single story,—an effect most desirable in both the exterior and interior of churches. Again, this throwing of two or more stories into one, necessarily reduces the quantity and strength of horizontal lines, while increasing the length and number of vertical ones, so as to produce something of the Gothic *verticality*, which indeed is as decided in many buildings of this school as in the Gothic itself.

To describe these schools more technically, or with regard to *rules* rather than *principles*,—the Florentine is mostly astylar, the style of fenestration and rustic quoins; the Roman, the style of pilasters; the Venetian, that of columns. In calling the first astylar, we do not imply the total absence of external orders, but their absence as main features or on any considerable scale. Their chief application is to windows

and doors, and the greatest orders never include so much as the height of a single story. In the Roman school, the great scale of the principal order renders it chiefly an order of pilasters, since the entablature could hardly be carried from column to column, except by disingenuous contrivances which the art was not yet debased enough to allow. The inter-pilasters, however, of the great order were often filled in with smaller and columnar ones, in two tiers, while a still smaller set, decorating the openings, yet further enhanced the apparent scale; or rather enabled the eye truly to estimate the greatness of the actual scale; which, in large buildings affecting Grecian purity, is hardly possible. As the Venetians did not use such large orders, they easily made them more columnar, and introduced hanging entablatures, beautiful though useless. In this school there is (except in churches) no principal story or principal order; for if there be only one, it is mounted on a basement sharing attention with itself; and if there be more than one, they are nearly equal, or equally important.

If the reader understands the differences of character we have endeavoured to impress on him, he will readily guess that *arcuation* is almost absent from the Florentine, only sparingly used in the best Roman, and most abundantly in the Venetian schools. General plan and outline, in the Florentine is of the utmost simplicity and compactness (rendering it fitter for town than country buildings); in the Roman, slightly more varied; in the Venetian (whenever an open site will admit), broken, complex, picturesque, and poetic, like the architecture of painters' backgrounds, pyramidizing, *percée à jour*, and bristling with detached members. It is, of course, the only school attractive to the young, the romantic, the half-cultivated taste; and hence it naturally became the parent of all other schools, as far as the advance of the new or modern order of things would permit any thing like schools to arise, which was only very imperfectly the case after the introduction of the modern architecture into France, England, and other transalpine countries.

The French were slower in adopting Italianism than ourselves. Even after the fall of their long-lived Gothic, and the Burgundian form of Gothicesque, they still adhered pertinaciously to some national fancies, such as extravagantly high roofs, dormers, &c., and did not attain to Venetian purity (if such it can be called) till long after England had been beautified with the works of Jones and Wren. Once established, however, the French school retained its purity longer than ours, is hardly yet extinct, and places that country at present decidedly above the rest of the world in architectural taste.

The English school commenced with Inigo Jones, and ended, properly speaking, with Taylor and Dance, about the middle of the last century; for Sir William Chambers, though sometimes included in it, evidently formed no member of the series, but was essentially a modern, *i. e.* an *individual*, independent artist. The mistake has arisen from his having been felt to be the last earnest truth-seeker in English architecture; which since his time has pursued no aim but *novelty*, or the no less destructive (and perhaps even more contemptible) motive of mimicking particular styles.

The English school was exclusively founded on the Venetian, only two buildings presenting a very slight tinge of the Roman, viz. Blenheim, and the river front (only) of Greenwich Hospital. As for the Florentine manner, it was totally unknown in this country till introduced by Barry. The chief merit of our school was its escape from those absurd monstrosities that are exemplified at St. John's church, Westminster; which are abundant in the decline of most foreign schools. The chief defect was insufficient attention to general outline, especially of the upper parts. Only two artists, Wren and Vanbrugh, attended to this; and of these, the latter carried his study of it perhaps too far, making outlines too complex, broken, and painting-like.

The reader must not suppose that any school presents that smooth unbroken course of progress and decline, that unity

of aim,—that entire merging of individuality in *esprit de corps,* which characterizes the *styles* of olden time, and renders, in them, the works of different *artists* undistinguishable, while those of different *periods* are identified at a glance, and definable to within a few years. No, the schools belonged to a transition period between the mediæval and the modern,—the age of *styles,* and that of *individual artists.* There will never be another school (in *any* art); for, as styles ceased with the great change—the invention of printing,—so have schools now ceased with the complete establishment of the new state of things, consequent on that invention.

As the modern age advanced, schools became less and less definable; the transalpine, less so than the Italian; the decline of every school, less so than its rise,—less even-coursed, more interrupted by exceptional geniuses, as Scamozzi in Venice, Vanbrugh in England. At length we are arrived at that state in which there is no school nor ever can be. Henceforth every (real) artist must be a school in himself.

In proof of this, observe the regular advance, culmination, and decline (if he lives long enough) of every modern artist's manner. Of course this is visible only to those of cultivated taste, perhaps only to architects themselves. Now, architects are not a class famous for unanimity. If *they* agree on a point, there must be some reason for it. But I think all those of acknowledged taste and culture will be found to agree in this. Ask them each, separately, to review and give a general opinion on the whole series of the works of some brother of considerable length of practice, either living or lately dead; I doubt whether they will ever differ, either as to the fact of a regular progress and decline, or as to the precise work at which the one ended and the other begun,—a point as distinct as the culmination of the Gothic or any other style.

Attention to the effect wrought on Fine Art, by the great change from old (*i. e.* printless) to modern society, will guard

us against the dreams now indulged in by some, respecting possible new schools, and periods of pure taste. The thing is impossible. *There will never again be a period of pure taste.* There will never be another Periclean age, nor another thirteenth century. But there *may* be another Pericles. Observe the difference. Though general or national taste will always be depraved, there need not therefore be total depravity of all taste. Though purity can never be prevalent, it need not therefore be absent. If we can never hope to see another *thirteenth* century, let us be thankful that, on the other hand, we never *need* (but by our own fault) see another *seventh*, producing nothing true, and therefore (by a kind law of human nature) nothing permanent; hiding its imbecility, that shrunk from inspection, in ephemeral hovels,—that might pass into oblivion, and "leave not a wrack behind."

Some regret that we have (as they think) no national style. Alas! the woe is that we *have* a national style,—a national shame, as all national styles ever will be,—a disgrace from which our sole hope of escape is in other nations acquiring (quickly let us hope) styles as national, and therefore as vile and depraved. We are perhaps the only nation that has a national style, certainly the first in history that has had one; for, observe, *none of the styles of old were national*,—they were the styles of classes, priesthoods, and corporations: they attained their purity, I doubt not, precisely at the times when the many, the nation, knew least, talked least, and cared least, about architecture. This was the very essence of their success,—that they were the exclusive production of the thinking few, uninfluenced by the thoughtless multitude; though universally admired, yet totally unpopular, un-national.

Pure taste in architecture (or any other art) is a thing of much thought, owing all its value to that thought, and therefore inaccessible and *utterly unintelligible* to the hurried, the gross, or the thought-grudging. All who expect fine things to *descend to them* are utterly debarred from the truly fine.

Far from producing, they shall not even enjoy or see it. It is forbidden by immutable justice; it is impossible in the nature of things. Pure art, then, ever has been (in every nation), is, and (under the present dispensation) ever will be, the exclusive and inalienable property of the few, the thoughtful, the earnest. If it ever became the *only* art, that was because these few contained the only artists,—nay more, the only judges, the only dilettanti. Such a state of things can never occur again while a printing-press exists. The many now have a voice in art. Therefore most art is, and ever will be, art for the many and of the many; and as long as the many (in every nation) are vulgar, gross-minded, and thought-sparing, so long must every national style, by an indispensable necessity, be a national disgrace.

The architecture of France and other European nations has not yet sunk so low as ours, because it has not yet become so national. Only at home can we trace the whole melancholy but instructive story of the gradual nationalization, and consequent debasement, of architecture, from an art of the few, in the reign of Edward II., to an art of the many, in that of Victoria. For all that long descent of six centuries, steadily and irrespective of all change in decorative styles, do we find *every* step,—every change even in the smallest member,—a change from truth to falsehood, from the genuine to the sham. As early even as the Tudor, or at least the 'renaissance,' we begin to exclaim, 'surely degradation *can* stoop no lower. This must be the limit of falsehood. Every word being a lie, they cannot alter one without telling a truth.' Yet the next step shows us how short-sighted we are; for, impossible as it seemed, a change is yet made for the worse,—the affectation made more affected, the fraud at once more fraudulent and more transparent, the art at once more artful and less artistic. At every successive step does further debasement seem inconceivable, yet the next step effects it; and even now, though it baffle imagination to conjecture how absurdity may be increased, we may be sure that if the art *can* be made more

national, means *will* be found of rendering it yet more absurd and more false.

What then? Can we dispense with the disgraceful art, and have no architecture? Impossible! We defy you to do without architecture: it is a part of the nature of man, and he can no more throw it aside than he can cease to be man; it were easier far, to dispense with building. Neither the caves of Petra, nor the Arab tents pitched there, are building; and yet both are architecture. The nations indeed, the many, had no architecture, in the times of the styles; but they could see and admire that of the few. Now, they must have architecture of their own, true or false.

At length, then, we have a national style. But, alas! not only can no man or set of men build unarchitecturally, or without a style,—but neither can they avoid stamping their mind thereon, and leaving the indelible impress of the characters of the style-formers; *i. e.* not always the designers, but the majority or most influential part of those who have affected the style, by example, by infection, contagion, or mere proximity. Thus the old styles, though not national, bore some impress of the national characters. Dr. Möller asks, What will teach a man so much, in so little time, respecting the comparative characters of the Greeks and the Chinese, as a glance at the views, placed side by side, of the Parthenon and a pagoda? We will add: suppose an intelligent person, well acquainted from history with the comparative characters of the ancient Egyptians, Greeks, Romans, Mediæval Clerics, Arabs, and Hindoos, but having never seen any of their architecture, to be shown it for the first time, would he have any difficulty in identifying the productions of each? Well, our present style, being more national, is more full of character than any of these. More distinctly than the Egyptian piles speak of tyranny, slavery, and priestcraft;—more fully than the Greek express intellect, polish, and refinement;—more loudly than the Roman proclaim ambition, and general energy;—more truly than the Gothic embody a religion, or rather a romantic

devotion;—more than all, does every form and feature of the modern English style express fickleness, low cunning, hollow affectation, simulation, servility, and thought-flying hurry. What! are these then our national characters? No, but they are the characters of the *many*, in every nation; and we are as yet the only nation that have a style of the many. I appeal to all who have ever returned to our shores, after a long absence, to say whether they could shut their eyes to the hateful expression that met them in every building;—whether they could at first walk our streets without being disgusted, and, if of a sensitive temperament, almost sickened, by the intensely marked character of the architecture.

But where, it will be asked, is the architecture of the few, the thinking, the truth-seeking? There is none; it is swallowed up, and mostly indistinguishable from the mass; for, observe, though a majority, or an independent body, cannot build without expressing their true character, (however they may cheat or simulate in any thing else, they can never give a false expression,) it is otherwise with a *minority*. With all their efforts to express themselves truly; inexpertness in the language, want of technical culture, want of union, an eye deadened by long use to the ugliness of the prevalent expression,—all these causes may conspire to render their most earnest endeavours unavailing to free themselves from the influence of the general corruption, which will thus often overrun and falsify the expression of their works. *To obviate this, is now the office of true architecture.* The general taste can never improve. Pure taste can never again prevail; but it can *fight*. Ever in the minority, it nevertheless need never be extinct. It can only exist, indeed, by fighting every inch. This is its glorious destiny, to wage a perpetual war against falsehood; perpetual, because it ought never to yield or relax, yet can never hope to conquer; glorious, if maintaining its ground, from that very hopelessness,—for is it not more glorious for a minority to stand their ground against overwhelming numbers, without hope of respite or victory, than,

as in ancient and mediæval times, to have twice routed the sleeping enemy by surprise, and after each occasion to have been themselves fairly routed in their turn?

CONCLUDING REMARKS.

Among the few, then, that enlist on the side of Truth, and resolutely engage in this perpetual conflict against false, against popular, against national taste, it must ever be borne in mind, first, that *there is no substitute for thought*. All the ponderous tomes of examples, specimens, &c. from Adams and Stuart downwards, have been intended, or received, for this purpose; and, *as such*, are not only totally worthless, but extremely prejudicial; though invaluable as materials for analysis, free criticism, and search into principles,—for which purposes they have never yet been used.

Nothing can increase the value of a design, which does not increase the labour of the designer, (by designer I do not mean draughtsman.) *Every reference to precedent should do this, and will do so with every true artist.* But the false artist refers to precedent, to save himself trouble; that is, to cheat his employers, by diminishing the value of his work, without diminishing its apparent value.

II. Novelty-hunting, and the false use of precedent, are the Scylla and Charybdis between which, the many, and the architects of the many, are for ever destined to be wrecked. It is possible, however, to fall into both at once.*

That nothing is beautiful which is without motive, most of the thinking will admit; yet it is necessary to add, that *novelty* and *antiquity* are no admissible motives. But though

* Thus at present (as *nothing* can be real) even our novelty is only sham novelty,—a copy of a copy,—masons' whims or blunders, raked out from the corners of Italy.

age affords no reason whatever for the *adoption* of any thing, it gives every reason for its *examination* and *study*.

III. We cannot too strongly instil into the reader, that, while *novelty* is in itself neither a beauty nor a fault, but totally immaterial,—*novelty sought for its own sake* is the destruction of art. The end of art is truth. The instant it proposes any other aim, (be it *novelty*, or to 'catch the spirit' of a particular time or place, *i. e. mimicry*, or any other fancy,) it ceases to be art; and what is not art, is not architecture. Aim at catching the spirit of *all* true architecture, not that of any one style,—still less, of a notoriously *false* style.

IV. If, as we have also endeavoured to instil, the main distinction between artists is, that some strive to put as much thought as possible into a given work, and others to do that work with as little thought as possible,—then, if one of these principles be art, it follows that the other is not merely its absence, but its opposite;—not a mere negation, but an active principle, for which, finding no name used, I would propose the term *anti-art*.*

A very small portion of *anti-art* peeping out, is enough to destroy all our pleasure in a work of art. Witness the pots and cowls that finish the sky-line of most of our piles of architecture. A foreigner would think this nation bankrupt,

* Here is the simplest instance I can find, which will display the two principles. The reader knows the old established way of cutting the stones of an arch in rusticated masonry, each stone presenting a five-sided face: well, two other modes have lately been adopted, each making the faces of the stones four-sided. In one, the voussoirs are alternately long and short, like battlements; in the other, their extrados is cut to a regular curve. Persons of taste, however, prefer the old method, but without knowing why. Now I will tell you why. Just sketch the three on paper, and you will perceive that the old is by far the most troublesome to design, yet gives the least work to the mason, having fewest oblique joints. Thought is expended to save manual labour. But in both the new modes, mental labour is saved at the expense of the manual. The first is *art*, the others *anti-art*.

to judge by the innumerable public buildings standing unfinished, covered with these hideous make-shifts.

V. The highest beauty is fitness. Therefore, when you see a thing highly beautiful, *beware of copying it* till after mature study; for the more beautiful (*i. e.* the fitter) it may be in its situation, the less likely to be fit (*i.e.* beautiful) in any other.*

Those who wonder why architects often condemn what other persons of good taste admire, seem to forget that the latter cannot distinguish what belongs to the designer, from what belongs to the theory of his art as he found it, and which not only the true artist learns, but even the most ignorant *falls into*, as we inevitably fall into the habits of those around us. But the eye of an architect has acquired the power of instantly separating these two parts of the design, setting aside the one as a mere matter of routine, but singling out and fixing itself on whatever is the *designer's own*. Now, if we perceive that all the beauty,—all the truth, in the building, belongs to the former portion;—that whatever belongs to the designer, whatever is new,—is false,—is adopted either for novelty, or to save thought, or for affectation, or for anti-art; we condemn the work, and justly: for what avails it to have been correct as far as rules and precedent would apply, if *wherever* he has acted for himself he has sinned? What avails it to have repeated truly the 990 words for which he could find authority, if the 10 which he was obliged to add are *all* false? It is these ten *alone* that show whether he is an artist or not; and these things, though small, and escaping the casual glance of the public, glare to our eyes as huge blots, totally defacing the routine beauty; though that may form the major portion of the work, and may cause the uninformed to regard it as *pleasing on the whole*.

* It seems wonderful that English builders cannot perceive, that if a design be beautiful, (*i. e.* fit,) standing on the ground, *therefore* it must be unfit and monstrous when hoisted aloft over a gaping void;—or that if a form be beautiful at the foot of a building, it *must*, for that very reason, be hideous at the top, and *vice versâ*.

Beware of mistaking this *on the whole*, for *as a whole*. Sir Joshua Reynolds observes, that "the totally ignorant beholder, like the ignorant artist, cannot comprehend a whole, nor even what it means." When such speak of the effect *as a whole*, they mean *on the whole*. The effect to them is pleasing, if it contain a majority of pleasing parts.

Such are now the most influential judges of art. By a singular inconsistency, those who constantly profess to be *no judges*, are really the style-formers. They say, 'We know nothing of the art, but we know what pleases us.' But what does this assume? Plainly, that the art is intended to *please them*. This is the grand art-destroying error. No true art is, or ever was, meant to please the many, but to teach them when to be pleased.

In limiting, we fear, the number of true artists, it must be remembered that one may be a true artist without being a master, or any thing like one. The difference is this: most buildings are so transparent, that we look at their front, and see through to the back of the designer's mind. According to the proportions we see of *thought-spending* or *thought-saving* spirit, so we admire or condemn; and when we can discern no self-sparing, no anti-art, we pronounce the work *purely elegant;* but not necessarily *masterly*. The work of a master is equally or even more transparent; but though the eye pierce deeper, and perhaps find more faults, it cannot reach the bottom. Admire as much as we may, we perceive that there is more beyond, left unadmired.

The few principles which we have endeavoured to elicit or explain in this volume, have been arranged in an upward progression, from narrow and particular, to wider and more general ones. We first tried to distinguish the different grades of beauty in building, and assign them their true relative ranks. Thus colour, whose laws of harmony are purely physical, came before uniformity, which appears sometimes addressed to the sense, and sometimes to the mind. Beauty of outline, being wholly addressed to the mind, though per-

haps to its lowest faculties, came next, and was traced to the union of unity and variety, which union is to be effected in two ways,—by gradation, and by contrast. Proceeding then from unmeaning beauty to that which is distinguishable into classes, we showed that its two opposite characters—*grandeur* and *elegance*—depended on the comparative prevalence of these two principles—contrast and gradation. According to the relative proportions of these, we divided all possible forms into five classes, and insisted on the observance of the natural disposition and subordination of these classes one to another, as practised in all the pure and admired styles. This we regard as the most important principle in mere *geometric design*, apart from constructive and other fitness.

We then considered the two cognate qualities of *sublimity* and *picturesqueness*, referring the former chiefly to,—1, the prevalence of contrast, and rarity or absence of gradation; 2, the expression of mechanical power in the construction; 3, the principle by painters called *breadth*, *i. e.* the collection of every thing or quality into great unbroken accumulations; 4, a quality we called *depth*, the reverse of flatness or shallowness. On the difficult subject of picturesqueness, we simply gave the notions of Ruskin, that it arises from the same qualities that would be sublime in the subject itself, attaching themselves not to its essence, but to some *accident*, as light and shade, colour, situation, state of decay, &c.

We next considered how nature should be imitated, with generalization, *i. e.* by taking all possible objects that have the character we want to give, extracting all that they have in common, and rejecting what is peculiar to each. We insisted on the same method as necessary in the imitation of masters, styles, and manners; and endeavoured to distinguish between true and false imitation or copyism. Another kind of false imitation, viz. *deception*, was then considered; the grievous error of regarding it as an object of art, the total destruction thereby fallen on popular art, and the great caution necessary for the thoughtful who would escape this defilement. Con-

nected with this we endeavour to enforce *constructive truth* or the non-disguise of the real statical principles of the construction; and lastly (a principle hitherto totally neglected by the moderns), *constructive unity* or the consistent adherence to *one* statical method throughout a building.*

* It may, to some, appear strange that I have said nothing of a principle so much mentioned in every mouth, as *Simplicity*. Simplicity (whatever meanings it may have in other subjects) has in art only one meaning, which is, the exact opposite of *Affectation*. Sir Joshua Reynolds observed, that it was hardly possible to define these two most subtle antagonist spirits. Like air or light, thin, ethereal, ubiquitous and inevitable, they still seem to laugh at theory, and elude the grasp of words. May we not then conclude, that Simplicity is wrongly called a *principle* of art, being rather its highest *object*,—not one of its means, but of its ends?

Correct expression in building is rare and difficult, poetry yet more rare, but Simplicity is the rarest and most difficult quality of all. There is great danger in confounding it with other things called by the same name, which leads to affecting those things as means of art, (which they are not,) and thus induces the exact reverse of Simplicity, *viz.* Affectation. Engineers are peculiarly liable to these mistakes, and should be told that *whatever affects Simplicity has it not.*

The most disgusting of all affectation is the attempt to appear artless. But artlessness is the perfection of art; for the aim of true art is not to *appear*, but to BE, artless.

We could hardly enumerate the absurd or art-ruining principles that have been taken and used for simplicity. The most harmless have been, 1, *Geometric Simplicity;* 2, *Plainness*, or absence of ornament. These, indeed, are sometimes merits, but are not Simplicity. If they were, the west portico of Drury Lane Theatre would be finer than the Parthenon; and Somerset House, before it was covered with tinkers' pots, must have been finer than if the architect had allowed it real chimneys.

But Simplicity has also been sought by,—3, *Rudeness*, or absence of thought for the spectator; 4, *Barbarism*, or neglect of general experience, acting as if no previous art were known; and 5, *Anti-art*, (see note, p. 254,) mistaken for artlessness, the perfection of art.

Of barbarism, there is one mark very liable to pass for Simplicity. This is the *unprepared transition from one member to another* (as in the Gothicesque 'discontinuous impost'). It is essentially the mark of a savage. In all civilized architecture there are only two instances of it, *viz.*

The two short reviews of the 'pure styles' afford the reader particular instances and modifications of these principles, and perhaps of some higher ones.

Pure architecture, then, may be regarded as consisting in the

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the springing of the Doric shaft from the stylobate, and that of the triglyph from the tænia (which, however, has some preparation in the subtriglyph). *Such things can be allowed in no other style.* Remember, that the highest order of poetry admits of expressions that would be barbarous in any other writing. Unprepared transition from ground to wall, from wall to roof, can be perpetrated only by savages. Even London plasterers know this; but not knowing that what is beautiful when true, ceases to be beautiful when false,—they stick on a sham plinth overhanging the 'area,'—and as the progress of all popular art is from truth to falsehood, then from true falsehood to sham falsehood, &c.; this plasterers' art is (incredible as it may seem) *copied in granite*, (see the pedestal to George IV. in Trafalgar Square.)

Simplicity seems to me to require (among other principles) a sort of utilitarianism, like that of the Gothicists, but totally different from that of modern engineers. For instance, Salisbury cathedral is one of the most distinguished buildings in the world, for true simplicity. Its buttresses (which, as far as I can learn, are the *oldest in existence*, perhaps the first ever built) are surpassed in beauty by none, equalled by few. Now, so strictly utilitarian are they, that I doubt whether you can find a single moulding or cutting which does not either economize material, increase their mechanical efficiency, or their durability (by throwing off the wet). They are pieces of excellent *engineering*, then. Let us compare them with modern engineering. A modern engineer would have made them, doubtless, plainer, and (what is nearly the same thing) geometrically simpler,—much simpler in form. But *this would not have been making simpler buttresses.* It would only have been making *ruder* ones; less durable, less efficient for the same mass, more massive for the same mechanical effect, and uglier because containing less thought. I regard the Salisbury buttress (if it be original) as the most artistic feature invented since the time of Dorus,—its designer lavished upon it all the thought he could, in order to save material and manual labour; just the reverse of the principle of most modern architects and engineers, who would have saved themselves a vast deal of trouble, at the expense of the material or labour of others, and at the expense of beauty; for beauty is entirely proportional to the amount of *thought* left in the stone.

combination of constructive and decorative TRUTH in their widest sense, or of constructive and decorative UNITY.

This union was anciently sought by all nations,—attained by the Greeks alone,—dissolved by the Roman introduction of the arch,—gradually lost by the increasing admixture of that constructive principle,—RESTORED by its total adoption, to the exclusion of all other apparent construction,—and a second time lost by the increase of tensile construction and the indiscriminate mixture of all constructive methods.

Since this second degradation of the art, however, many great artists have lived, especially in Italy, a country which has never attained a system of constructive unity. For, except the pseudo-Greek buildings of the empire, and the pseudo-Gothic pile of Milan cathedral, with a few other exotic importations, it has never seen a building possessing even the appearance of constructive unity. Such a country is that in which we might look for the development of a style suitable to the *mixed* construction practised for the last three centuries; and, accordingly, in that country, such a style did, after many ages of unsuccessful efforts, at length appear, under the constellation of artists that adorned the fifteenth and sixteenth centuries. The system then developed was a *new* one, though composed of classic details. It affords more scope for variety in general arrangement than either of the pure systems,—certainly more than any impure ones; and it possesses a pliancy that may be bent to all the purposes probably that can ever be required in buildings of mixed construction. As long as such construction prevails, we may safely predict the continued prevalence of this architecture among the thinking.

But the two pure systems, perhaps it will be said, are things too good ever to be entirely given up. If so, far more are they too good to be abused and caricatured. If they are worth copying at all, they are worth copying completely; and this can never be done but by copying their *construction* as well as their decoration. If modern habits or means will not permit this, they will not permit the old style. Count the

cost, therefore. If you want to imitate the archless style, your building must be archless, or a huge lie. If you imitate the beamless style, it must be beamless; and every unvaulted building, ancient or modern, that apes this style, is a motiveless and unmeaning sham.

Not less preposterous than the attempt to revive *dead styles*, is the requirement to invent, for ordinary buildings, a *new* one. As long as we have no new style in construction, we *can* have none in architecture; but if we call the mixed construction a new kind, we *have* a new style adapted to it,—a modern, a living style; the growth of modern circumstances and of the existing modes of construction:—*new*, moreover, inasmuch as we are only on the threshold of its possible combinations and varieties, far more inexhaustible than those of either of the pure systems. In this country particularly, the beauties of the modern architecture are hardly known, nor can it be said to have ever had a fair trial, or indeed any trial in more than one or two classes of buildings.* It would be ridiculous self-conceit in an architect, to pretend wilfully to go back and try to solve anew that which has been already solved, and only by the succession of a long line of great artists. He can never hope to overtake them with such a start in their favour; while by commencing from the point they reached, the poorest talents may advance beyond them.

But while no inventive architect would *wish* for a new style, convinced that there is far more scope for variety and new combination in one already enriched with the accumulated genius of three centuries; it is certain that, in another point of view, a new style is indispensable. There *is* a class of

* What are called classic churches, for instance, are, for the most part, mere anti-art, no more Classic than they are Chinese. Wren had no opportunity of erecting a handsome parish church. His pupils fell either into littleness or Borominian corruption; and since their time, there have only been hole-in-the-wall preaching rooms,—sham temples,—and now pseudo-Gothicesque barns, copies of copies by mediæval village masons. England does not possess a modern church in the modern style.

buildings tending towards a new style of construction,—becoming less mixed in this respect,—and approaching a consistent use of *tensile* covering to the exclusion of every other. To this third system of constructive unity, there is NO old style adapted. None was invented for it. It is a new thing, and its treatment must be NEW,—new, because subject to old principles; and to be effected only by a patient search into those old principles. Let us not mistake what we have to do. It is that which has been done only twice before; in the time of Dorus, and in the thirteenth century. We must carefully attend to the modes by which it was effected on both those occasions. On the first it was done most perfectly. There was the least to do. There was no lumber of a rotten system to sweep away. There was falsehood indeed to rectify, but it was only decorative, not constructive, and probably unbacked by prejudices and precedent. The second purification was less complete, but more like, in circumstances, to that now required. Its grand impediments were prejudices in favour of old but useless forms, and against an useful member (the buttress), under the notion that it was unarchitectural. So is it now. The method of tying buildings together, (said Wren,) instead of giving the arches, &c., sufficient butment, is contrary to the principles of sound architecture. Yes, contrary to the only two systems of architecture known to him or to us, but not therefore contrary to all possible systems. A Greek would have condemned thus the method of wedging stones together by lateral pressure; and after this method was introduced and used in all buildings, it was fifteen centuries before architects could be brought to admit the appearance of this lateral pressure. For a still longer period has *tension* been a principle of building, and yet not of architecture; much longer has the *tie* been struggling for admission, and been refused. As nothing was effected towards the development of the second system till the arch-covering became universal,—till a building became *beamless;* so can no advance toward the

third be expected till this constructive principle become universal, in the widest covering and in the narrowest,—till a building be erected both *without lintel* and *without butment*.

If the retaining of useless entablatures after their office was superseded by the arch, was a falsehood and a hindrance necessary to be swept away before any progress could be effected,—have we not a perfect parallel in the retaining of useless buttresses after their duty has been superseded by the tie?

There is, among other art-destroying fallacies, a notion now prevalent, that architectural styles spring up of themselves, and that if we wait long enough, in process of time a new one may grow up, we know not how. A new railway is more likely to grow up. Decorative *manners*, *fashions*, are not to be confounded with a new style, still less with a new system, such as THE TWO, the only two, that possess constructive and decorative unity. Yet even a new fashion does not come unsought,—without search after *novelty*. Far less can an architectural system arise but by an earnest and rightly directed search after TRUTH. For five thousand years have all the nations beyond the radius of Greek influence sought a true system of beam architecture, and *never* found it. For fifteen centuries did Europeans use the arch, and seek a system of arch architecture, before they found it. For a much longer time have Arabs, Turks, Chinese, sought the same, and *never* attained it. For twenty centuries did the Italians practise mixed construction, and seek a system thereof, before they attained it. Let us not deceive ourselves: a style never grew of itself; it never will. It *must* be sought, and sought the right way. We may blunder on in a wrong path for ever, and get no nearer the goal.

A new style requires the generalized imitation of nature and of *many* previous styles; and a new system requires, in addition to this (as Professor Whewell has remarked), the binding of all together by a new *principle of unity*, clearly understood, agreed upon, and kept constantly in view. Con-

structive statics affords three such principles, — the DEPRESSILE, the COMPRESSILE, and the TENSILE methods, — the *beam*—the *arch*—the *truss;* of which the two former have been made the bases of past systems: the third is ours, to be used in the same manner.

Such I believe to be the problem Truth propounds to the architects of the present time; but its solution will be found utterly hopeless, as long as we indulge any hankering after *novelty for its own sake;* any mean disposition to follow instead of correcting *popular taste;* and above all, let none dare attempt it till we have engraved on our compasses a hacknied sentence, but one which I suspect to contain nearly the whole theory of art,—SEEK NOT TO SEEM WHAT YOU WOULD BE, BUT TO BE WHAT YOU WOULD SEEM.

THE END.

Hughes & Robinson, Printers, King's Head Court, Gough Square.

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Garbett, Edward Lacy
Rudimentary treatise on the principles of design in architecture.

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